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ALCOHOLMETRICAL TABLE.

BY ALONZO ROBBINS.

Showing the strength of commercial alcohols, and of different mixtures, by weight, of commercial 95 per cent. alcohol and distilled water, at 60°F.

	Percentage by volume.	Percentage by weight.	Specific gravity.
Absolute alcohol,	99'60	99'19	'7962
Extra cologne spirit,	94'75	92'03	'8170
Cologne Spirit,	93'75	91'02	'8199
95 per cent. alcohol,	93'25	90'19	'8223
Neutral sweet spirit,	41'50	34'80	'9494
95 per cent. alcohol 10 parts, water 1 part,	87'00	82'07	'8433
“ “ 9 “ “ 1 “ “	85'75	80'58	'8469
“ “ 8 “ “ 1 “ “	85'50	80'26	'8477
“ “ 7 “ “ 1 “ “	84'00	78'53	'8521
“ “ 6 “ “ 1 “ “	82'75	76'94	'8559
“ “ 5 “ “ 1 “ “	81'50	75'38	'8595
“ “ 4 “ “ 1 “ “	78'25	71'43	'8685
“ “ 3 “ “ 1 “ “	74'00	66'80	'8798
“ “ 2 “ “ 1 “ “	67'50	59'90	'8959
“ “ 1 “ “ 1 “ “	52'00	44'50	'9303
“ “ 2 “ “ 3 “ “	43'00	36'10	'9469
“ “ 1 “ “ 2 “ “	36'00	29'90	'9579
“ “ 1 “ “ 3 “ “	27'00	22'17	'9689
“ “ 1 “ “ 4 “ “	23'00	18'77	'9731
“ “ 1 “ “ 5 “ “	19'00	15'43	'9772
“ “ 1 “ “ 6 “ “	17'00	13'78	'9791
“ “ 1 “ “ 7 “ “	15'00	12'13	'9814
“ “ 1 “ “ 8 “ “	13'00	10'50	'9834
“ “ 1 “ “ 9 “ “	12'00	9'68	'9844
“ “ 1 “ “ 10 “ “	10'00	8'05	'9869

All the alcoholmetrical tables of the books being based on mixtures of absolute alcohol and water, it appeared desirable to have a table taking as a basis the commercial 95 per cent. alcohol, mixed with such

various proportions of water as might be used by the pharmacist in the preparation of menstrua.

The table here given is not presented as entirely correct; but it is believed that the figures are sufficiently accurate for use in practical pharmacy, for which purpose alone the table was prepared.

As it is proposed to use only parts by weight in the next United States Pharmacopœia, the quantities of alcohol and water were in each case so taken.

The first five lines in the table give the strength of different spirits as found in the market. The extra Cologne spirit differs from the Cologne spirit by being a portion reserved from the first part of the distillation; the Cologne spirit is the entire product of deodorized alcohol obtained in the run; the 95 per cent. alcohol is that in most general use, and it is often as free from odor as the Cologne spirit; neutral sweet spirit is very extensively used, under various names, in the liquor trade, and might be employed with advantage in pharmacy.

The percentages by volume given in the table are too high in the ten lower items, but this error in most of them does not exceed one-fourth of one per cent., and in some is much less.

The percentage by volume was obtained by Tralles' centesimal hydrometer, and the book of tables prepared by Prof. McCulloh for the use of the revenue officers of the United States. The percentages by weight were obtained by the following rule, taken from Muspratt's "Chemistry," page 118: "The content, by weight, of alcohol in a liquid, the centesimal value of which per volume has been found, is ascertained by a simple calculation. This operation is done by multiplying the content per volume of alcohol into the specific gravity of absolute alcohol, and dividing the product by the specific gravity of the liquid;" and page 131: "Knowing the percentage volume of alcohol in a liquid at any temperature, the same results are arrived at when such percentage is multiplied by the specific gravity of the pure anhydrous spirit at the normal thermometric degree—0.7939 in Tralles' tables, and 0.7947 in Gay-Lussac's—and dividing this product by the density of the liquid at the observed temperature." But 0.7938 being now more generally considered as the specific gravity of anhydrous alcohol, that was taken as the basis of the calculations to obtain the percentage by weight. The percentage by weight was then compared with the specific gravity in Fownes' table, to correct error due to differ-

ence of temperature, it being found impracticable to maintain a regular temperature of 60°F. during the time required to take the percentage by volume with the hydrometer and the specific gravity with the bottle.

NOTE ON AN IMPROVED MINIM PIPETTE.

BY CHARLES W. DREW, PH.B.

The disadvantages incident to the accurate measurement of minute doses of liquid preparations by means of ordinary graduates are apparent, and to ensure greater precision in dispensing, a graduated minim pipette of small calibre has been adopted by many physicians and pharmacists.

The ordinary method of measuring with these pipettes is to fill them by suction applied by means of the mouth, quickly closing the upper end with the fore-finger, the excess of liquid above that desired being allowed to flow out by slightly raising the finger. To this method, under certain circumstances, no objection can be adduced; yet if the liquids which it is desired to dispense are of a volatile or poisonous character, such a method is better avoided, especially by unpracticed persons.

To obviate this inconvenience and danger several appliances have been proposed, the principle of all of which has been to fill the pipette without the use of the mouth. To all of these which have come to my notice there have been greater or less objections, and I desire to bring to the notice of physicians and pharmacists a simple appliance which seems better adapted to their needs than any other yet described. The appendage to which I refer may be made as follows: take a piece of glass tubing, *a*, about one-half the length of the pipette, *b*, and of a calibre just sufficient to allow the pipette to pass within it, and by means of a gas or alcohol lamp, partially close one end of it. Place upon the open end of the tube a tightly-fitting piece of soft rubber tubing, *c*, about three-fourths of an inch in length, allowing about one-third of its length to project beyond the end of the tube. Place the pipette within the tube, and the apparatus is com-



Minim Pip-
ette.
3/4 nat size.

plete. In order to fill the pipette, force it upward to the closed end of the telescoping tube, place the point beneath the surface of the liquid, close the open end of the tube with the finger, and gently raise the outer tube. The liquid is sucked upward, and may be raised and held at any level within the limit of its intended capacity with the utmost readiness. The liquid is readily discharged by either pressing the outer tube downward or by removing the finger.

The principle involved in the instrument is essentially that of the syringe, the rubber tube answering to the air-tight piston. If desired, the upper end of the outer tube may be entirely closed, in which case the necessity for stoppage with the finger is avoided. If any difficulty is encountered from the slipping off of the rubber tube, a slight flange may be made upon the outer tube, which will prevent this. Excessive friction between the rubber and the pipette may be avoided by moistening the inner surface of the rubber with glycerin or other lubricant.

This apparatus, as will readily be seen, is also admirably adapted for use as a dropper, the column of liquid being under perfect control, and very readily made to flow outward at any desired rate by simply regulating the downward motion of the outer tube; for this purpose I would recommend the entire closure of the upper end of the tube.

While for some uses of the pipette such an appliance is unnecessary, yet for many others it will, without doubt, prove of great convenience as one of the simplest and at the same time most efficacious of any which have been devised.

New York, Feb. 1st, 1879.

THE MICROSCOPE IN PHARMACY.

BY EDWARD GAILLARD, PH.G.

Read at the Pharmaceutical Meeting, February 18th.

Perhaps no field of microscopical investigation teems with richer veins of interest and instruction than its application to pharmacy. Feeling deeply interested in it myself, I shall throw out a few suggestions that will assist those amongst us who have an hour of leisure, and taking up the scattered clews may work it into a fabric of information of surpassing pleasure.

It is a common error to suppose that in order to see anything clearly it is necessary to magnify it very much. The majority of objects that

are studied or examined by the pharmacist are best seen with a moderate power. It must be remembered that when a great magnifying power is applied to the ordinary objects of the store we are able to see only a very small portion of them, and the results are unsatisfactory; most interesting objects that are likely to present themselves can be seen by means of a power under two hundred diameters.

Three things will be found necessary, viz.: magnifying power, good light and a good instrument. Almost all opaque objects can be seen with a power of twenty-five diameters—the list includes seeds, minerals, preparation of plants and their general structure, as shown by sections, leaves, roots, the crystals of Epsom and other salts, salicin, santonin, quinia, the other alkaloids of cinchona, and many other objects.

The active process of crystallization and the deposition of metallic silver in crystalline form from the nitrate in solution may be shown by placing a drop of the solution on a glass slide, and in it a small piece of brass wire; immediately crystals will appear and grow till they have spread as far as the liquid extends. Similar results will be obtained with any concentrated solution made from the crystalline salts we have on our shelves if allowed to evaporate spontaneously.

Many substances of vegetable origin are not fit for medicinal use when first gathered; others, which are reliable when gathered and properly and carefully prepared, are subject to deterioration if kept for some time. Even the roots of the virulent aconite are sometimes converted into impalpable dust by microscopical insects; the leaves of *Conium maculatum* and other powerful narcotics are rendered inert by the process set up in their interior by fungi. These injurious changes are often not discovered by the naked eye, and explain the fact that some of the carefully prepared tinctures and extracts are devoid of their medicinal power.

Prof. Bailey, of West Point, called attention to crystals found in plants, and that saline substances are spontaneously crystallized within the cells, existing in infinite numbers throughout barks, woods and leaves of numerous trees and shrubs. The beautiful tinted juices to which flowers and leaves owe their variety of colors, the sweet odors with which they perfume the air, the gums, balsams, starches, natural alkaloids in endless profusion, are fabricated by the vegetable cell; even the lichen and smallest moss is an interesting object. Examination

proves that the crystals viewed by a low power are imbedded in their natural position even in the dense guaiacum wood. They may be seen by dusting the powder into a little water, picking out the woody particles and examining the residue, and by the same manipulation they may be found in the borage, hydrastis, matico, chiretta and other plants.

Should we wish, for example, to satisfy ourselves whether a given specimen of pulverized cinchona bark is adulterated or not, we first examine a thin layer of the perfect bark under the lens and ascertain the exact appearance of the crystals therein. Then we place some of the finely ground bark under the instrument, and if the crystals are identical with those in the perfect specimen, we may decide the former to be genuine. If other crystals are found, the testimony is strongly in favor of adulteration. This test, with another which consists in the investigation of the ultimate structure of barks, leaves, roots, will enable the pharmacist to avoid imposition by adulterated drugs.

The examination of the sediments of our tinctures show crystals, and that of water the presence of animalculæ and spores of fungi, which are capable of contaminating other fluids and starting decomposition in many of our flavored waters and pharmaceutical preparations.

The pharmacist who takes up the subject will find his pharmacy a vast store-house of endless pleasure and information to dispel his long business hours.

THE BARK OF *CARYA TOMENTOSA*, Nuttall.

BY FRANK R. SMITH, PH.G.

Abstract from a thesis presented to the Philadelphia College of Pharmacy.

In examining hickory bark, collected by himself, the author succeeded in isolating a crystalline principle for which he proposes the name *caryin*, but states that it is identical with *quercitrin*. It was obtained in the following manner :

An infusion of the bark was treated with solution of lead acetate as long as a precipitate was produced ; the precipitate was well washed with water, then suspended in water and the liquid saturated with sulphydric acid. The sulphide of lead was removed by filtration and after standing for about twelve hours, the clear filtrate was of a yellow color

and had deposited a number of small crystals, which were purified by recrystallization from weak alcohol.

The principle thus obtained is soluble in alcohol, and the solution has an acid reaction on litmus paper. It is almost insoluble in cold water, but dissolves freely in boiling water, the solution being of a yellow color. On filtering its alcoholic solution through animal charcoal, the latter retains the greater portion of the principle. The color of the solutions is rendered lighter by acids and deeper by alkalies. Ferric chloride added to the solution changes the color to deep green.

The author determined also the presence in the bark of a small quantity of tannin and of sugar. Resin, gum and starch appear to be absent.

On incineration the bark yielded about 2 per cent. of ash, containing salts of calcium, potassium and sodium.

NOTE BY THE EDITOR.—The specimen of the principle presented by Mr. Smith shows the usual reactions of quercitrin, prepared from the bark of *Quercus tinctoria*, and when ignited, is decomposed without leaving any residue; it is, however, of a darker color and has a decided greenish tint. It deserves a closer investigation.

CONCENTRATED LIQUOR AMMONII ACETATIS.

By LOUIS EMANUEL, PH.G.

*Read before the Pharmaceutical Association of the Pittsburgh College of Pharmacy,
January 21st.*

Of late, a number of pharmacists have been making a concentrated solution of ammonium acetate, which is diluted to a certain strength as required for dispensing. Their favorable accounts induced me to try its practicability, and, being pleased with its convenience, I concluded to continue its use. Having exhausted the pure acid I had on hand, a small quantity was purchased from a wholesale drug house, which was labeled "acetic acid, U. S. P.," purporting to be strictly pure, and, relying in confidence on the seller, no tests were made, although it had a slight empyreumatic odor. The acid was neutralized with pure ammonium carbonate and yielded a solution having a decided blueish tint, which, after standing several days, changed to a light-brown color, a brown precipitate being at the same time deposited.

Upon examination, the acid was found to be of the proper strength and to contain copper and sulphurous acid.

This circumstance called to mind that the solution has another important property, which is due to its concentrated form, as in that state the impurities common to acetic acid are more readily detected and often noticeable to the eye, as in this instance; for the blueish tint could not be noticed upon diluting the solution with five parts of water.

The commercial acetic acid is, as a rule, unfit for making liquor ammonii acet., as it invariably contains copper or other impurities. The first I used was that made by Dr. Squibb, which was perfectly free from empyreuma and insensible to all tests for copper, lead, etc., and produced a perfectly colorless solution. This pure acid cost thirty-five cents (20 for the acid, 15 for gr. bottle) while the impure cost twenty cents, yet this small advance seems to be quite an obstacle towards the employment of a superior article.

In preparing this solution, W. H. Woodcock (see *Dr. Cir.*, page 182, 1878) employs the British formula for liquor ammonii acetatis, diluting, however, the concentrated solution, formed only as it is required for use; he also uses U. S. P. acetic acid, which is 3 per cent. stronger than that of the British Pharmacopœia, and, in diluting, he uses one measure of concentrated solution and five of distilled water, forming a liquor ammonii acetatis somewhat stronger than our pharmacopœia. Of course, the solution is not of a powerful nature, yet we should have uniformity of strength in medicine, if possible, and especially should not let the opportunity go by in this instance, when uniformity can be so readily accomplished and, therefore, I would suggest the following modification:

Take of acetic acid ten fluidounces, ammonium carbonate, three troyounces or a sufficiency. Pour the acid in a capsule, add the carbonate, set aside until effervescence has ceased (this will measure eleven fluid-ounces), evaporate by the aid of a gentle heat to ten fluid-ounces and add ammonium carbonate until the solution is neutral. Wood and Bache recommend to make it slightly alkaline, as the acetate of the alkalies are alkaline to test paper when they are neutral in composition, so it is very difficult to ascertain the exact point of saturation. I have here the solution made from the impure acid containing such an excess of ammonium carbonate as to cause a brisk effervescence upon the addition of more acid, yet it turns red litmus

paper only faintly blue, and blue litmus paper will be tinged red at the edges, becoming entirely red when exposed to the air a short time. On the strength of this fact, I usually make the solution so that it turns blue litmus faintly red.

By this process ten fluid-ounces of acetic acid are used and ten fluid-ounces of the solution are obtained, and consequently we must dilute in the same proportions as for making Acid. Acetic. Dil., U. S. P., that is, one measure to seven, and, using carbonic acid water instead of distilled water, form the officinal liquor ammonii acetatis. The use of carbonic acid water is not of a secondary importance, as the officinal solution contains carbonic acid gas, and its presence often allays vomiting. It is not difficult to obtain, as almost every pharmacist has a soda water apparatus in constant operation during the summer season, and in the winter the syphon bottle may be resorted to, or a quantity may be put up in vials of various sizes, being well stoppered, and kept in a cool place ready for use. It should, however, be free from copper and other impurities.

The ammonium carbonate should also be carefully examined, as the commercial article frequently contains animal oil and tarry matter.

Pittsburgh, Jan. 21st, 1879.

FLUID EXTRACT OF WILD CHERRY.

BY WILFORD O. HIGGATE, PH.G.

Abstract from a thesis presented to the Philadelphia College of Pharmacy.

A fluid extract of wild cherry bark, prepared by the process described below, is regarded by the author as possessing all the virtues of the drug and as representing it fluidounce for troyounce.

Eighteen troyounces of the bark are reduced to a powder, passing through a No. 40 sieve. Of this powder sixteen troyounces are well moistened with a mixture consisting of 4 parts of glycerin, 4 parts of simple syrup and 2 parts of water. The moistened powder is then packed moderately tight into a cylindrical glass percolator, and a sufficient quantity of the mixture is poured on until the liquid just begins to drop. The percolator is then corked and covered, and set aside for four days, during which time the amygdalin will be decomposed into volatile oil and hydrocyanic acid. Percolation is then commenced with the mixture mentioned above, to ten parts of which one part of alcohol

has been added. The first fourteen fluidounces are to be reserved and the percolation continued until six fluidounces more have been obtained, the latter portion being employed for percolating through the reserved two troyounces of the bark, after they had been moistened with a portion of the original menstruum for three or four days. From this second portion of bark, two fluidounces of liquid are obtained, and this is mixed with the reserved 14 fluidounces.

Fluid extract of wild cherry bark thus prepared keeps well, has the proper odor and the taste of the bark, and possesses the advantage of mixing in all proportions with water without causing precipitation.

ADULTERATIONS.

By GEO. W. KENNEDY, PH.G.

Read at the Meeting of the Alumni Association, Phila. College of Pharmacy.

A sample of powdered gum arabic was handed the writer by a friend, which was purchased at a drug store in a neighboring town, with the request that I examine it as to its purity. Its behavior, when treated with boiling water in the preparation of mucilage to be used as a paste, indicated that it was an impure or an adulterated article, and that some foreign substance must be present, since the mucilage was not so adhesive as some prepared on former occasions from gum purchased elsewhere. It is known that flour, starch and dextrin have been used as adulterants, and, on a close ocular examination, small white pieces or globules of what appeared to be starch were discovered in the powder, which was of a yellowish tinge and furnished a yellowish mucilage. With the assistance of a small pocket magnifying glass, there was no difficulty in determining that the adulterant was starch, evidently very badly mixed, and certainly not by an expert or an experienced hand in this reprehensible practice. The writer is of the opinion that the adulteration was made by the retail druggist where the article was purchased, and not by the wholesale dealer who often has to shoulder such ignominious proceedings. In making the investigation, I was induced to examine some six other samples, purchased by the author from as many retail drug stores, with the following results:

A mucilage was prepared from each sample with boiling water and allowed to cool. The reagent used was tincture of iodine, largely

diluted, and, with sample No. 1, the suspected article, a deep-blue color was immediately produced, proving the presence of starch, the amount present being, approximately, 25 per cent. Five other samples, judging from their appearance, solubility and behavior to the test, I would pronounce very good specimens of gum acacia. A seventh sample was much darker in color than the others, and, since the reagent produced a reddish-purple color, the presence of dextrin would seem to be indicated.

It is high time that some means should be resorted to for preventing the fraudulent mixing and reducing of drugs, and I hope that the State Pharmaceutical Association will take this matter in charge and endeavor to have a law passed prohibiting, under severe penalties, the manufacture and sale of all adulterated articles. In some localities, a conscientious pharmacist is hardly able to earn a livelihood, owing to the mean and dishonest competition which surrounds him. It is natural for people to seek the cheapest places to make their purchases, and this necessarily places the reputable apothecary to a great disadvantage. Pharmacists should endeavor to make the people understand the difference in goods of guaranteed purity and the opposite, and that the latter is dear at any price.

A few years ago, I was offered a lot of India senna leaves for 5 cts. a pound; at the time, in small lots, it was selling for 25 cts. The price being extremely low, my suspicions were aroused and, upon close examination, I found it was considerably damaged by moisture and age, and, in my judgment, unfit to be used as a medicine. Being a little inquisitive as to what became of the large quantity which the party represented to have on hand, I was surprised when informed that not only the house which he represented, but also another manufacturer were using it in the preparation of fluid extract, and, as the party remarked, "it makes a very elegant extract," there is no doubt but a considerable quantity of old, damaged drugs, instead of being submitted to the flames or thrown away as worthless, are consumed in the manufacture of various galenical preparations.

Only a short time ago, I was informed by two reliable apothecaries that a neighboring druggist was dispensing sulphate of quinia, but which subsequently turned out to be cinchonidia, at the rate of about 40 cents per drachm. The price of sulphate of quinia at the time was \$5.00 per ounce, and that of cinchonidia, 80 cents. For fifty

cents he would dispense a prescription calling for quinia sulphate $\mathfrak{z}\text{i}$ and ferri chlor. $\mathfrak{z}\text{i}$; and for 25 cents he would sell a dozen of two-grain quinia pills. In both cases the price charged for the medicine was lower than the principal ingredient could be purchased at wholesale.

CHEMICAL NOTES.

BY PROF. S. P. SADTLER.

Inorganic Chemistry.—F. Jones, in a paper read before the English Chemical Society, Nov. 21st, announces the preparation of a *hydrogen compound of boron*. By heating a mixture of boric oxide with magnesium dust, and after treatment of the magnesium boride, Mg_3B_2 , formed with hydrochloric and nitric acids, is obtained a colorless inflammable gas, which burns with a green flame, and is undoubtedly hydrogen boride. In preparing magnesium boride, 2 equivalents of magnesium must be taken for every 1 equivalent of oxygen in the boric oxide.—*London corresp. in Berichte*, XI, p. 229.

C. Counciler has prepared a number of the organic derivations of boron, with a view of throwing light upon the question whether boron may be quinquivalent as well as trivalent. All of the organic compounds seemed to indicate only the trivalent character of the element. He succeeded, however, in preparing *boric oxychloride*, BOCl_3 , a compound exactly analogous to POCl_3 , and he therefore considers the probability as very great that boron is to be classed in the nitrogen group of elements, possessing both trivalent and quinquivalent character.—*Journal für pr. Ch.*, 1878, p. 371.

The existence of the hydrogen boride mentioned above was not known to Counciler at the time of his writing. A careful study of its formation would undoubtedly throw much light upon the question.

Th. Salzer calls attention to the explosive character of a mixture of *sal ammoniac* and *bleaching-powder*. One grm. each of bleaching-powder and sal ammoniac, air-dried, when shaken together, are sufficient to liberate copious fumes of a spontaneously inflammable gas. This appears to be owing to the formation of ammonium hypochlorite, and not to any possible production of chloride of nitrogen.

He therefore cautions dealers and others against allowing bleaching-

powder to become mixed with ammonium salts in store-rooms or other receptacles for chemicals.

Organic Chemistry.—W. Kelbe has prepared a *new hydrocarbon*, by heating rosin oil (the high-boiling portions of the product of the dry distillation of colophony-resin) with sulphur, to 200°C. and higher. The same compound is obtained by treating the rosin oil with phosphorus pentachloride. The hydrocarbon is obtained in white pearly scales, fusing at 94° to 95°C. It is decomposed on distillation, yielding another hydrocarbon, fusing at 86°C. This latter yields on analysis 91.5 per cent. C. and 8.5 per cent. H.

Kelbe does not propose any formulas for these hydrocarbons.—*Berichte*, XI, p. 2174.

Merz and Tibiriga have endeavored to make the reaction of carbonous oxide upon soda-lime, giving rise to *sodium formate*, a commercial one. They pass CO over the soda-lime heated to 200° to 250°C., and obtain as product the sodium formate. If the high temperature does not act injuriously upon the production of the formate, and if the sodium salt can be produced cheaply, the question of manufacturing cyanogen compounds from ammonium formate can be again taken up. *Chem. Industrie*, I, p. 391.

Among the rapid strides that are constantly making in *organic synthesis* may especially be noted several that have been taken within the past year.

Bayer has made a complete synthesis of *indigo-blue*. It is true, the process is too involved and costly for practical use as yet, but its steps may be shortened and made simpler at no distant day. The starting-point is benzyl-chloride, and it involves the formation successively of phenyl-acetic acid, amido-phenyl-acetic acid, oxindol, isatin and, lastly, indigo-blue.

Fischer, similarly, has made the synthesis of *rosanilin*. Taking triphenyl-methan $\text{CH}(\text{C}_6\text{H}_5)_3$, from this is prepared trinitro-triphenyl-methan, and, on oxydation, trinitro-triphenyl-carbinol, and, from this, rosanilin.

Hofmann has shown that the blue dye-color, *cedriret*, is the dimethyl ether of pyrogallic acid. He has also shown that the *eupittonic acid* of coal-tar is a hexa-methyl derivative of rosolic acid, the well-known phenol dye-color.—*Chem. Industrie*, I, p. 394.

Analytical Chemistry.—F. Bei stein gives a method for the *sepa-*

ration of zinc and nickel that is said to exceed in exactness all other methods. The quite dilute solution of the nitrates or sulphates is made ammoniacal, and then acidified with pure citric acid. After the solution has become perfectly cold, hydrogen sulphide gas is passed in until the solution smells distinctly of it. The precipitated sulphide of zinc will contain all the zinc. After standing 24 hours, the sulphide of zinc is filtered off and weighed as such. The filtrate, concentrated down to a small bulk, is saturated with ammonia, and the nickel precipitated by electrolysis. For this latter reason, the liquid should be in nitric acid solution, as ammonium chloride hinders the electrolytic precipitation.—*Berichte*, XI, p. 1715.

Applied Chemistry.—Within the last year or two, several improvements have been introduced by the French in the working of the *molasses residues* from the beet-root sugar manufacture. These residues, after treatment for the extraction of the potash salts, are now submitted to dry distillation, and several most valuable products are obtained.

In the distillation gases and tar are formed, together with much condensed water. The latter alone is important. From it is obtained ammonium sulphate, methyl alcohol and large amounts of crude trimethylamin salts. The methyl alcohol is all sold for use in the manufacture of anilin colors, while the tri-methylamin salts, by a new process of Vincent, the chief promoter of this industry, are decomposed with the production of methyl chloride, an extremely volatile liquid, boiling at 23°C. This is used in the formation of artificial ice, and also in the manufacture of anilin colors containing methyl. This fine utilization of what was long regarded as purely a waste product was considered as one of the most striking improvements in applied chemistry shown at the late Paris exhibition.—*Dingler's Journal*, 230, p. 263.

Petroleum Soaps.—These soaps, lately brought on the market, are formed by adding petroleum, with which has been mixed a definite quantity of Carnauba wax, to the soap-making materials. If these products are submitted to distillation, the petroleum distills off unchanged, and the soap remains behind, also unchanged. The soaps dissolve entirely in water, neither the petroleum nor carnauba wax separating out even as an emulsion. A. Livache has examined the question of the effect of the admixture of carnauba wax upon the petroleum. This wax is

composed of a fatty acid combined with myricyl alcohol. When the fatty acid is saponified, the myricyl alcohol must dissolve in the soap formed. This appears to be the case, and not only so, but the alcohol causes petroleum to go into solution also in the soap. Livache found that other substances besides the myricyl alcohol would act thus—methyl and amyl alcohol were able to render petroleum soluble in soap.—*Comptes Rendus*, 87, p. 249.

GLEANINGS FROM THE GERMAN JOURNALS.

BY LOUIS VON COTZHAUSEN, PH.G.

Recovering Ether in Preparing Etherial Extracts.—Instead of recovering the ether by expressing the exhausted drug, E. Rohn mixes the drug with sufficient water to form a thin paste, and then heats the latter in a still over an open fire to about 60°C., when the ether evaporates and passes into the condenser. In this manner the author recovered more than 3 kilos of ether from 8 or 10 kilos of extracted male fern.—*Schw. Wochenschr.* Dec. 6, 1878, p. 425.

Wooden Suppository Moulds.—Bernbeck prefers wooden suppository-moulds to metal ones, claiming that they are not only considerably cheaper and easier to handle, but can be used in many cases where metal moulds would be objectionable, f. i. for nitrate of silver suppositories. The principal disadvantage of wooden moulds is the difficulty experienced in removing the suppositories, when the moulds are coated with almond oil or talcum, as usually directed; in the place of these Bernbeck uses glycerin with success.—*Phar. Zeitung*, Jan. 11, 1879.

The Purgative Effect of Hypodermic Injections of Aloin has been investigated by Dr. Fronmaeller, who states that a solution of one part of aloin in 25 parts of very warm water will have the same purgative effect, when injected hypodermically as when taken internally. Two injections are usually necessary to produce the desired effect in from 6 to 14, very rarely in 2 to 3 hours, there being scarcely any irritation and never an abscess caused, where injected. Hypodermic injections with extract of aloes (1 part in 10 parts of water) also proved efficacious, but produced a stronger inflammation, where injected, than aloin.—*Pharm. Post*, Jan. 1, 1879, p. 5.

Vieirin or Vieiric Acid.—Vieirin is a bitter principle, isolated from the bark of the root of *Remigia ferruginea*, D. C., (*Cinchona ferruginea*, St. Hil.) and was first introduced and recommended by Dr. Vieira in the treatment of scrofula and rhachitis. It is made by mixing the powdered bark with half its weight of hydrate of lime, extracting with boiling water, treating the filtrate with hydrochloric acid and the resulting precipitate with animal charcoal. When fresh it is white and possesses the pleasant odor of *Quina de campo*; on exposure to the air it turns yellow, and when dry possesses scarcely any odor. It is heavier than water, insoluble in ether, water and the volatile oils, scarcely soluble in fatty oils, but soluble in alcohol and chloroform.

Tinctura Vieirinæ is a solution of 1 part vieirin in 10 of alcohol. **Syrupus Vieirinæ**, or **Syr. calcii vieirinatis** consists of 3·0 hydrate of calcium, 3·0 vieirin, water and sugar, of each sufficient to make 300·0 of strained syrup.—*Pharm. Centralb.* Jan. 9, 1879, p. 12.

Ferrum sub-benzoicum, $2(\text{Fe}_2\text{O}_3)3(\text{C}_{14}\text{H}_5\text{O}_3)+15\text{HO}$, used successfully in the treatment of scrofula in the dose of 0·1 to 0·2, three or four times daily, is made as follows: Mix 100 parts of ammonia water, sp. gr. 0·96, with 1500 parts of distilled water, and dissolve in the mixture, with constant agitation, 37 parts of crystallized benzoic acid, add 60 parts of acetic acid or sufficient to render the mixture neutral, and precipitate it with a mixture prepared of 72 parts of solution of ferric chloride (sp. gr. 1·48) and 100 parts of distilled water. After standing for one day, collect the precipitate on a strainer, wash with cold water, and, having removed the greater portion of the latter by expressing, dry the precipitate in a warm place.—*Ibid.*, p. 11.

Chrysophanic acid has been recommended in England as a remedy for psoriasis and parasitic skin diseases, and was recently used successfully in several of the largest hospitals of Berlin. It appears in commerce as a yellow amorphous powder, possessing a peculiar strong odor, and is not soluble in water, scarcely soluble in alcohol, but more so in ether; it does not answer the description of the pure acid, nor does it yield exactly the same reactions, and must therefore be considered an impure preparation.—*Pharm. Ztg.*, Dec. 18, 1878, p. 872.

Quinia Arsenite.—Commercial quinia arsenite was analyzed by Oscar Adler, who found it to be a not uniform mixture of arsenious

acid and quinia instead of a chemical compound; 2 grams of the mixture contained 0.142, As_2O_3 , 0.746 quinia and 0.112 gram water. The author prepares pure quinia arsenite by boiling for some time hydrochlorate of quinia with silver arsenite, both suspended in diluted alcohol, when very delicate needles appear in the filtrate, which are soluble in 15 parts of cold and 6 parts of boiling alcohol, in 8 parts of chloroform, in 25 parts of ether, in 20 parts of benzol, and scarcely soluble in cold, but soluble in about 150 parts hot water; the constitution of quinia arsenite is $(\text{C}_{20}\text{H}_{24}\text{N}_2\text{O}_2)_3\text{H}_3\text{AsO}_3 + 4\text{H}_2\text{O}$.—*Arch. d. Pharm.*, Jan., 1879, p. 43.

Poisonous Effects of the Seeds of *Agrostemma Githago*.—These seeds are said to be frequently used in France as an adulteration of cheap flour, being ground with the grain. Two 500 grams lots of wheat flour containing, respectively, 30 and 45 per cent. of these seeds, administered to two calves, caused severe cramps in the stomach in the course of an hour, followed by diarrhoea and finally death. The seeds, offered to poultry, were not touched by chickens but eaten by ducks and geese, and had the same poisonous effect. All had severe inflammation of the bowels.—*Arch. d. Pharm.*, Jan. 1879, p. 87.

Poisoning by Aconite Root.—Seven persons who had taken bitters, prepared by mistake from whiskey and fresh aconite root in the place of rhubarb, immediately complained of severe pain in the stomach and head. Three died almost instantly, while the others were removed to a hospital and were restored to health in a few days.—*Pharm. Ztg.* Jan. 11th, 1879, p. 27.

Poisoning with Salicylate of Sodium.—Dr. Feltz reports the poisoning of a man who took 200 grams of salicylate of sodium in one month. He took 4 grams three times daily for seven days, then increased the dose to 6 grams, and, in the last 17 days to 8 grams three times daily. The intoxication symptoms were principally frequent vomiting and repeated attacks of very painful headache, preceded by reddening of the neck, face and head. His pupils were very much contracted and the symptoms continued for 17 days after the last dose of medicine had been taken, while the acid could be detected in the urine for 16 days.—*Ap. Ztg.*, Dec. 14th, 1878, p. 205.

Salicylic Acid against Taenia.—After trying almost all other remedies in vain, Marynowski administered to a lady who had suffered with

tænia solium for nine years, 0.5 salicylic acid four times at intervals of one hour and then gave a tablespoonful of castor oil. This treatment proved painless and perfectly successful.—*Apoth. Ztg.*, Jan. 11th, 1879, p. 6.

New Disinfectant.—An Australian physician, Dr. Day, recommends a mixture of 1 part of rectified oil turpentine, 7 parts of benzin, and, to every ounce of the mixture, 3 drops of oil verbena for disinfecting clothes, furniture, carpets, wall papers, books, papers, etc., claiming that it does not injure the latter, while the oxidizing power is sufficiently great to cause the articles to retain the disinfecting properties for some time.—*Ap. Ztg.*, Jan. 4th, 1879, p. 2.

THE ACTION of SULPHOCYANIDE of POTASSIUM on SEVERAL CINCHONA ALKALOIDS.

BY O. HESSE.

(Translated by P. H. Dilg, Ph.G., from "*Archiv der Pharmacie*," Dec., 1878.)

Several years ago, Schrage described a method for distinguishing several of the cinchona alkaloids based on the reaction of sulphocyanide of potassium on their salts. Strange to say, cinchonidia was entirely omitted, contrary to the fact that it constituted at the time a more important article of commerce and manufacture (though under the name of quinidia) than any of the other alkaloids examined by him, with the exception of quinia. But as cinchonidia is chemically closely allied to the latter, it was obvious that the omission of it made the utility of the method doubtful. This induced me, on a former occasion, to repeat the respective examinations, including cinchonidia, by which I came to the conclusion that the microscopic test in question is not sufficiently characteristic to make it reliable, especially regarding the distinction of cinchonidia and quinidia in quinia. I still uphold this claim, but am willing to admit now that the presence of cinchonidia in quinia may be detected to a certain degree by the quality and quantity of the sulphocyanide formed, but not by the quality alone, as both Schrage and Godeffroy observed. The conditions to obtain reliable results are:

1. The sulphocyanide of potassium must be in aqueous solution of invariable concentration. The strength employed in the following is that recommended by Schrage (equal parts).

2. The relative strength of the sulphocyanide of potassium solution and the alkaloidal solution, as far as practicable, must not vary after it has been once decided upon.

3. The alkaloidal solutions must be saturated solutions of the respective sulphates in water at ordinary temperature. They may be obtained by digesting 1 part of the sulphate with 10 parts of water, at 50° to 60°C. for a few minutes, and when the mass has acquired the ordinary temperature filtering the solution; the filtrate must not have the property of crystallizing independently when the microscopic test is applied.

4. Observations of the reactions must be repeated until no change is apparent. The time usually required for each reaction is only a few minutes, with a few exceptions, where an hour and more is needed.

My observations, described in the following, will embrace only the sulphates of quinia, cinchonidia, quinidia, cinchonia and homo-cinchonidia; the latter is included on account of its frequent presence in cinchonidia, and sometimes even in sulphate of quinia. Of Drygin's new alkaloid cinchonichia, asserted to be present in sulphate of quinia to the extent of 6 per cent., no further notice was taken, as I consider it insufficiently examined cinchonidia.

Sulphate of Quinia.—Only absolute pure sulphate was employed. Special mention is made of this as the commercial article prepared according to the various pharmacopœias cannot be always depended on. For instance, the British Pharmacopœia allows sulphate of quinia to pass as pure, though it is liable to contain about 20 per cent. cinchonidia sulphate. The absence of other cinchona alkaloids from sulphate of quinia may be determined by digesting 2 grams of the latter for a short time with 10 times its weight of water at 50° to 60°C., shaking the cooled and filtered solution, after precipitation, with ether, and slowly evaporating the latter. If the sulphate was pure, the residue is entirely amorphous. Pure and uneffloresced sulphate of quinia (with 8H₂O) is soluble at 20°C. in about 600 parts, and sulphocyanide of quinia in 562 parts of water; the latter combination being more soluble than the former, it seems reasonable that the sulphate has not a tendency to be readily converted into sulphocyanide. Nevertheless, sulphocyanide of quinia is formed when the two solutions are brought in contact, and this is due to sulphocyanide of quinia being less soluble in solution of sulphocyanide of potassium than in pure water (contrary to Schrage's state-

ment). The separated quinia is increased in quantity with the excess of solution of sulphocyanide of potassium until no trace of quinia can be detected in the solution with ammonia. If, on the contrary, the solution of the sulphate is increased the precipitate diminishes, and at last the reaction ceases entirely.

The microscopic test, where equal parts of the solutions of sulphocyanide of potassium and sulphate of quinia are used, exhibits at the point of contact a very slight separation of minute drops, which are replaced in a few minutes by needles arranged into many-rayed stellate groups. The number of these groups is scant. I was unable to obtain with really pure sulphate the reaction described by Godeffroy (see "Amer. Jour. Phar.," 1878, p. 179, Fig. 1).

Sulphate of Cinchonidia.—If one drop of solution of sulphocyanide of potassium is brought in contact with 1 cc. of the sulphate solution at ordinary temperature, it will become milky, due to the separation of sulphocyanide of cinchonidia in an amorphous condition; this soon changes to concentrically grouped delicate needles. If the sulphate solution was boiling hot, a faint turbidity will appear a few minutes after the addition of the sulphocyanide solution, which soon disappears as larger needles are formed. Sulphocyanide of cinchonidia is so completely precipitated from its aqueous solution by an excess of sulphocyanide of potassium, that ammonia will not produce a precipitate; proving conclusively that, contrary to Schrage, sulphocyanide of cinchonidia is insoluble in an excess of sulphocyanide of potassium. Regarding the microscopic test it will be found that on using the cooled saturated sulphate solution, a large quantity of oil-like globules will instantly be formed, but these soon give way to the formation of concentrically arranged needles.

Sulphate of Homocinchonidia.—Its reaction with the test liquid is almost identical with that of sulphate of cinchonidia. Apparently the conversion of the sulphocyanide from its amorphous into its crystalline state is somewhat more rapid than in the former alkaloid. Besides the stellate formations, isolated needles are discerned.

Sulphate of Quinidia (Conchinia).¹—Sulphocyanide of quinidia, as formerly stated, dissolves at 20°C. in 1477 parts of water, and conse-

¹ Schrage calls this alkaloid *β quinidia*, because Kerner, in 1862, adopted this name, and because in consequence of the adoption of his well-known test by the German

quently is less soluble in it than any other sulphocyanide of the cinchona alkaloids. Besides this, it passed very rapidly from its amorphous into the crystalline condition, so that the characteristic forms are readily produced. The crystals, obtained from the dilute solution are flat, stellately grouped needles; but if their development is interfered with, as in the microscopic test in question, where they are formed between two plates of glass, the groups frequently assume a dendritic appearance, and from moderately dilute solutions, flat needles in stellate groups are likewise produced, sometimes also isolated prisms, and occasionally elongated six-sided scales attached to the branches of the dendriform groups.

Sulphate of Cinchonina.—If a cold saturated aqueous solution of this sulphate is treated at ordinary temperature with sulphocyanide of potassium a white curdy precipitate is produced, while with a moderately warm dilute solution, pretty prisms and scales are formed, the latter being generally six-sided, the former four-sided and either truncate or pointed. As in the previous cases, a small excess of sulphocyanide of potassium facilitates the entire precipitation of cinchonina from the neutral sulphate solutions. Under the lens it is demonstrated that the crystal-groups of the sulphocyanide of cinchonina go through the same process of formation as sulphocyanide of quinidia, and it is most likely due to its greater solubility that the crystals are better developed. Larger crystals are formed, and others are frequently attached in certain directions producing dendritic forms, sometimes fan-like groups and single prisms. The asserted resemblance to equisetum, grass, slate-like formations and antlers appears to be of little value.

In regard to this microscopic test, Godeffroy claims that it would indicate every sophistication or impurity of the sulphate of the cinchona alkaloids by the different forms of the crystals, while Schrage considers it merely an auxiliary and useful reaction, which he apparently had considerable trouble to comprehend. This is probably accounted

Pharmacopœia, Kerner's terminology has in a manner been legalized. But, for the same reason, Schrage's cinchonidia should be called quinidia. However, it should also be remembered that in 1870 Kerner not only discarded the name β quinidia for this alkaloid in favor of *conchinia*, but also expressed the hope that the latter designation might be accepted in view of the simplification and greater accuracy of the nomenclature of the cinchona bases. I am well aware that this name is not favored by some and that in France and England it is at once translated with quinidia; but I trust that gradually a better understanding of the subject in question will be had.

for by the fact that the above sulphates, when mixed, sometimes have different actions than when separated.

The method in question does not indicate, according to my experiments when using solutions of 1 in 10, an admixture of 10 per cent. sulphate of cinchonia in sulphate of quinidia, or *vice versa*, as needles arranged in stellate groups are produced, which may belong to either alkaloid. More satisfactory, however, is the result if the presence of sulphate of cinchonidia or homo-cinchonidia is to be detected in the alkaloids deviating to the right. If, for instance, sulphate of cinchonia containing 10 per cent. of sulphate of cinchonidia or homo-cinchonidia is used, it will be observed that first much sulphocyanide of cinchonia is separated in single crystals and dendritic groups of prisms, and then delicate needles, concentrically grouped, representing cinchonidia or homo-cinchonidia. If, however, either of the latter sulphates is present in cinchonia sulphate in smaller proportions than 5 per cent. it will not be indicated. The test also fails when quinia is present in cinchonia sulphate or quinia in quinidia sulphate. In the latter case the only indication of the presence of quinia might be that then the sulphocyanide of quinidia is partly separated in wart-like aggregations. But a small amount of cinchonidia or homo-cinchonidia produces a similar effect. If 3 per cent. of the latter sulphates are present in sulphate of quinidia the wart-like and dendritic groups of sulphocyanide of quinidia will first separate, and afterwards dense stellate crystals belonging to the sulphocyanides of the left rotating alkaloids.

As for testing sulphate of quinia qualitatively by this method, its difficult solubility in cold water may be taken advantage of. The microscopic determination is especially sensitive in discerning an admixture of quinidia and cinchonia. If 1 per cent. sulphate of quinidia is present in quinia wart-like crystal clusters of sulphocyanide of quinidia, and later, several groups of the crystals of sulphocyanide of quinia will be formed. If 2 per cent. is present, the dendritic forms of sulphocyanide of quinidia will immediately be noticed. If sulphate of quinia contains 1 per cent. sulphate of cinchonia isolated prisms, some of them curved, will immediately be obtained, then a few stellate groups, and at last the characteristic groups of quinia are formed.

Entirely different will be the result, however, if the sulphates of cinchonidia and homo-cinchonidia are present in quinia. From the results with the pure sulphates, an abundant formation of crystals was anticipated if

the admixture should amount to 2 per cent.; but the admixture not only retards the formation of crystals, but, within certain limits, prevents it entirely. With such an admixture, which may even be increased to 3 per cent., results were obtained agreeing exactly with Fig. 1 of Godeffroy, obtained from pure (?) sulphate of quinia. If the said admixture is increased to 5 per cent. a copious separation of minute drops is observed at the first moment, but above this percentage the sulphocyanides crystallize rapidly.

From this it follows that the test in question will indicate in sulphate of quinia an admixture of at least 1 per cent. of the sulphates of cinchonina and quinidia, and 5 per cent. of the sulphates of cinchonidia and homo-cinchonidia, provided that the solution of the latter is prepared in the manner indicated above. If the solution is prepared by a different mode, whether as directed by Schrage or by Kerner, the delicacy of the test, which I cannot regard as being of much practical value, is materially impaired.

QUINIA TEST.

BY O. HESSE.

Translated from Archiv der Pharmacie, December, 1878, by P. H. Dilg, Ph.G.

During several months past, I have exclusively tested sulphate of quinia by the following method, which may also be applied, properly modified, to other salts of quinia. My test is based on the following facts:

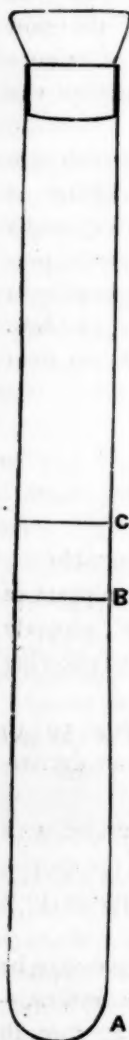
1st. That sulphate of quinia is sparingly soluble in water at 50° to 60°C., while the other sulphates are readily dissolved without decomposition.

2d. That when the cooled solution, after being supersaturated with ammonia, is shaken with just sufficient ether for dissolving the quinia, this quantity will be insufficient for the other alkaloids if present to a certain extent.

To execute the test I employ a tube which, for convenience may be termed "Quininometer." The dimensions which have proved satisfactory in practice are 10 to 11 mm. in diameter and 120 mm. in height. It is marked at *B* and *C*, the space *A* to *B* being of 5 cc., and *B* to *C* of 1 cc. capacity.

0.5 gram sulphate of quinia is well shaken in a large test tube with

10 cc. hot water (50 to 60°C.). After setting aside for ten minutes and shaking to prevent the sudden expulsion of the mass, the liquid is passed through a small filter, about 60 mm. in diameter, into the quininometer up to *B*, then 1 cc. of ether (to mark *C*) is added, and afterwards 5 drops of ammonia water. The quinometer is then corked and slowly shaken; the ammonia liberates the alkaloids, and these are taken up by the ether, which rises to the surface. After setting aside for two hours, the layer of ether should be devoid of crystals when examined with a lens. The official ether and ammonia will answer for this test. Special skill in its application is not required; at the same time the result is very reliable, and does not, like some tests, depend in a great measure on the skill of the operator.



Quininometer.

If the ethereal solution is devoid of crystals the sulphate of quinia is sufficiently pure, but it may still contain 0.25 per cent. sulphate of cinchonia, 0.5 per cent. sulphate of quinidia and about 1 per cent. sulphate of cinchonidia and homo-cinchonidia, which cannot be recognized by this method. If, however, these salts are present in larger quantity, crystals will be separated in the layer of ether, and if of granular appearance will indicate the presence of homo-cinchonidia or cinchonidia, while concentrically-arranged needles show the presence of cinchonia or quinidia. If the cinchonidia or homo-cinchonidia in sulphate of quinia amounts to or exceeds 3 per cent., as sometimes occurs, the granular crystals will separate in the layer of ether immediately or within 3 minutes after shaking. If this crystallization occurs only after about 10 minutes it may be concluded that the preparation contains about 2 per cent. of admixture. If 1 per cent. is present, the ethereal solution is still clear after 2 hours, but in 12 hours a few crystals of cinchonidia or homo-cinchonidia are noticed. If even after that time no crystals appear, it is evident that less than 1 per cent. is present. In order to ascertain whether the

latter alkaloids are present at all, it is only necessary to loosen the cork of the quinometer, allowing the ether to evaporate slowly; 0.5 per cent. of sulphate of cinchonidia or homo cinchonidia will leave a dis-

tinct crystalline residue, and a trace of either alkaloid will show only a few crystals imbedded in the amorphous mass of quinia. If no admixture is present the residue will be entirely amorphous.

If 0.5 per cent. sulphate of cinchonia or 1 per cent. of quinidia is present in sulphate of quinia, they will separate from the ether immediately after shaking. Since the properties of sulphate of quinia are of such a character that an admixture of the sulphates of cinchonia or quinidia is not likely to occur in the course of manufacture, it follows that, if they nevertheless are present, it is safe to pronounce them intentional adulterations. It is different, however, if cinchonidia or homo-cinchonidia are present, for although they are both very soluble in water, they crystallize with or follow in some way the sulphate of quinia, so that several recrystallizations of this salt are required to obtain it free from them. In regard to this, I have shown on a former occasion (*Liebig's Ann.*, vol. 166) that sulphate of quinia which stands Kerner's test, may be entirely purified by one recrystallization from boiling water.

Although it is not expected that sulphate of quinia should be absolutely chemically pure, I have found that much of this preparation in the market may pass as chemically pure. The manufacturer, therefore, is in a position to furnish a pure article, provided a suitable bark can be obtained; but my continued observations have convinced me that this is not always possible, and that the manufacturer is often compelled to employ cinchona bark containing cinchonidia in abundance, so that the salt, after careful purification, will contain 1 per cent. of cinchonidia or homo cinchonidia. For this reason, and to make my test applicable in every instance, I recommend observation of the layer of ether 2 hours after the shaking.

The above test, though, is simple and readily applied, and exceeds in accuracy all other tests published; it is therefore well adapted to the wants of the druggist and of the apothecary.

Muriate of Quinia.—This salt is more liable to be contaminated with hydrochlorate of quinidia and cinchonia than with hydrochlorate of cinchonidia and homo-cinchonidia. These admixtures are readily detected on operating as follows: 0.5 gram of hydrochlorate of quinia and 0.25 gram of crystallized sulphate of sodium (Glauber's salt) are introduced into a test tube, together with 10 cc. of hot water (about 60°C.); the mixture is well agitated, and then treated precisely in the same manner as described above for sulphate of quinia. The temperature is best kept at or a little above 60°C., because the resulting sulphate of quinia will afterwards separate in long crystals, and filtration will then proceed rapidly.

QUINIDIA TEST.

BY O. HESSE.

Sulphate of quinidia (*conchinia*, Hesse) is found chemically pure in commerce, particularly in Germany; but in some places the quinidia sulphate is entirely different. In Liebig's "Annalen," vol. 176, I have published a method for testing this salt, whereby the presence of mere traces of other cinchona alkaloids may be shown. But this excellent test does not seem to have met with the attention it deserves; at least this appears to be indicated by a recently-published communication on this subject (see "Amer. Jour. Phar.," 1878, p. 304). It may therefore be of interest to communicate the directions for applying the test, somewhat modified so as to correspond with my quinia test. They are as follows:

0.5 gram of quinidia sulphate and 0.5 gram of *pure* potassium iodide are introduced into a test tube, together with 10 cc. of hot water (about 60°C.); the mixture is repeatedly well agitated, and, after one hour, filtered. The filtrate, on being mixed with a drop of ammonia water, must not produce any turbidity.—*Translated from Archiv der Pharmacie*, 1878, December, p. 495.

THYMOL AND THYMOL-CAMPHOR.

BY CHARLES SYMES, PH D.

The pharmacy of thymol has already been ably treated in this Journal by Mr. A. W. Gerrard (see "Am. Jour. Phar.," 1878, p. 255), but as the substance continues to be largely used, fresh experience will, as a matter of course, be gained concerning it, and it is from the record of such from time to time that our knowledge concerning it and its relations will be perfected.

Some four or five weeks since an idea occurred to me (which has probably occurred to others also) that if thymol and chloral hydrate were rubbed together in a mortar they would possibly produce a liquid similar to the well-known chloral-camphor. Experiment proved, however, that such is not the case; but if an equal quantity of camphor be added to the mixture, the whole at once liquefies and produces what should be a powerful antiseptic. An opportunity was at hand which enabled me to test this property, for at the moment I was examining a quantity of urine containing pus, which was already in an incipient

state of decomposition. A fluidounce was separated, and to it two drops of the thymol compound were added: putrefaction was at once arrested, and at the present time the liquid has merely the odor of thymol, whilst the bulk of the urine from which it was separated became quite offensive in twenty-four hours.

Further experiments showed thymol and camphor, when rubbed together in the absence of chloral hydrate, also became liquid, and that the proportions could be varied from two parts thymol and one of camphor to one part of the former and ten of the latter, the result being a colorless syrupy liquid; equal parts of each give very satisfactory results.

The solubility of thymol in water is not greatly increased by this combination, but it is a very convenient form from which to prepare the ointment. It was stated in the paper already referred to that when dissolved in warm vaseline, so as to form a five per cent. solution, and set aside for a few days, the thymol separated in small crystals, which were highly objectionable, whilst Dr. Balmanno Squire has pointed out ("Pharm. Journ.," vol. viii, p. 602) that an ointment of greater strength than this will be required in the treatment of certain skin diseases. Now, thymol-camphor can be mixed with vaseline, unguentum petrolei or ozokerine, in almost any proportion.

An ointment prepared with twenty per cent., equal to ten per cent. thymol, has been kept for some weeks without any separation whatever.

A saturated solution of thymol in water (1 in 1,000) is found to be sufficiently strong for the spray during surgical operations, but for the throat and various other purposes it is often required stronger, and in such cases I know of no better aqueous solvent than milk, which takes it up readily in almost any proportion up to nearly ten per cent. of its weight; but it will rarely be required of such strength. Solution of borax is not a good solvent, but glacial acetic acid dissolves it most readily; a large proportion, however, separates on dilution. The acidum aceticum of the Pharmacopœia dissolves two grains in the fluidounce. There appears to be some difference in the sp. g. of thymol, arising probably from the source from whence derived; that described by Mr. Gerrard had a sp. g. 1.028, hence was heavier than water, whilst the specimens I have met with have only a sp. g. of 0.980 to 0.990, and float on or near the surface.

Business engagements have prevented me from carrying my experiments further, but I trust sufficient will be found in these notes to render them suggestive to the medical practitioner and pharmacist.—
Pharm. Jour. and Trans., Jan. 18, 1879.

THE ADULTERATION OF SOFT SOAP.

The "Manufacturers' Review" translates from the French of M. Emile Picard the following note on the adulteration of soft soap:

"One hundred parts of fatty matter, combined with soda or potash, yield 230 to 235 parts of pure soft soap, containing 33.14 per cent. of water. When certain adulterants are added in quantities too small to affect the appearance of the soap, 100 parts of grease will yield 320 to 340 parts of what would be a good commercial article, containing 33 to 38 per cent. of water. The same quantity of grease can be made to produce 380 parts of soap containing as much as 52 per cent. of water. The adulterants generally used are clay, resin, fecula and silicate of soda. All are added to increase the yield of soap and the proportion of water it can contain. Clay is the most harmless of these adulterants. It is partly dissolved by the alkali, but makes the soap opaque, and is easily detected by its insolubility in water. It increases the amount of water required to bring the soap to the proper consistence, but is not otherwise harmful. It is less and less employed every day. Resin combines with alkali, but the resulting compound 'possesses none of the emollient qualities of fats.' It retains large quantities of water, but alters the emollient and detergent power of the soap, and makes it more caustic and corrosive. Soaps adulterated with resin only are clear, brilliant and transparent; more soluble in water than pure soap. They nearly always retain a slight odor of resin, which is most noticeable when the soap is warmed. Their color is often redder than usual; they attack the skin, and make linen yellow. Fecula is very harmful, especially when combined with silicate of soda. It is generally employed with 3 or 4 times its weight of lye, water or silicate of soda. Soap made with it contains an excess of alkali and a very large quantity of water. It is more or less opaque as the proportion of starch is large or small; it is easily soluble in water; it is much affected by changes of temperature, and its deter-

gent power is much lessened by the large proportion of water it contains. The latter fault is partly concealed by making it excessively alkaline; it is then corrosive, and attacks and destroys the skin, coloring matters and woolen and silken goods. Analysis reveals the presence of the decomposition products of the latter in the water in which they have been washed. Silicate of soda with fecula is far the most injurious adulterant of soap, and it is also the one most usually employed. Almost all commercial soaps contain it. Silicate of soda in small quantities does not alter the appearance of the soap; but it is decomposed when used, and silica is deposited in the fibre of the flax or cotton and cannot be removed, rapidly destroying the tissues. Silk and wool are also attacked, and made more liable to be destroyed by alkalies. Water in which silk and wool have been washed with this soap contains considerable quantities of sulphur and ammonia, resulting from the decomposition of the material. According to Dr. Vohl, linen and cotton cloths thus treated look, under the microscope, like worn fabrics—the fibre destroyed and the surface covered with a nap. Franklin said good bargains are sometimes ruinous. This is particularly true of soaps. Low-priced samples are never cheap; a larger quantity must be used to cleanse an equal amount, and fabrics are far more rapidly destroyed.”—*Scient. Amer.*, Jan. 18, 1879.

NEW MODE OF PREPARING SOLUTION OF PERCHLORIDE OF IRON.

BY E. B. SHUTTLEWORTH.

The preparation of solution of perchloride of iron is always a disagreeable operation, and, on the large scale, especially so. The addition of nitric acid to the acid ferrous chloride requires to be made very carefully, and the operator must give it all his attention, else the rapid disengagement of nitric oxide may cause loss by foaming. The ordinary directions require the operation to be conducted at a temperature considerably above that of boiling water, and a vessel capable of bearing the heat of a sand-bath and of withstanding the most trying of acids is requisite.

If the plan proposed some years ago by Mr. R. Rother (using chlo-

rate of potassium) be followed, the operation may be performed with comparative comfort, but the introduction of a salt of potassium or sodium is an insuperable bar to the general application of the method.

The process may also be rendered much pleasanter, but at the sacrifice of time, by following the suggestions I made some years ago (1873), and allowing the mixture of acidified iron solution and nitric acid to stand a day or two at ordinary temperatures, or at the heat of a water-bath. In this way the use of expensive vessels may be avoided, and the whole operation conducted in earthenware. I have, however, for the past four or five months, pursued another plan, which was suggested to me by Mr. S. Cox, a practical chemist working under my direction, and which is so great an improvement on former methods, and which answers the purpose so admirably, that I feel justified in recommending it very strongly.

It consists in reversing the ordinary operation—adding the iron solution to the nitric acid instead of the acid to the iron. If the specified quantity of nitric acid be placed in a dish or pan, and the iron solution, mixed with the proper quantity of hydrochloric acid, be allowed to trickle slowly into it, the oxidizement is instantaneous in the cold, and the frothing very slight. The change from blackish-green to reddish-brown is very marked, and any deficiency in the quantity of nitric acid can be at once seen. On the large scale the liquor may be best added with a syphon. With a bent glass tube of five-sixteenths of an inch in diameter, the liquor from ten pounds of iron may be run in safely in twenty-two minutes, and requires no attention whatever, save in getting the syphon in operation. With pharmacopœial quantities of material, the process of oxidizement may be concluded in almost as many seconds.

The final concentration may be performed in a water-bath, and in this case earthenware vessels may be used, but of course the evaporation is much more rapid with the naked flame or a sand-bath; but a high degree of heat is not at all necessary in making this preparation.

I think this plan of reversing the order of mixing may be applied to many similar preparations, and shall be glad to learn the experience of others on this point.—*Can. Phar. Jour.*, Feb., 1879.

THE INCOMPATIBILITY OF BISMUTHI SUBNITRAS WITH THE ALKALINE BICARBONATES.

By THOMAS GREEN.

Although this subject has, both recently and on a former occasion, attracted much attention and comment, it can scarcely be said that it has been satisfactorily settled, inasmuch as opinion seems divided as to whether the evolution of CO_2 from the alkaline bicarbonates is due to free acid in the bismuth subnitrate, or to the chemical action which the latter has on the former; the preponderance of opinion inclining to the former theory. Mr. Yeats, who, I believe, first drew attention to the subject, tested the bismuth he had used and finding it to be slightly acid, thought that might account for the explosion, but, however, added that the real cause was probably a decomposition between the two salts, and formed an equation representing such decomposition.

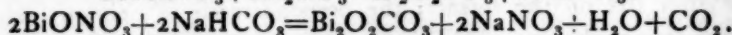
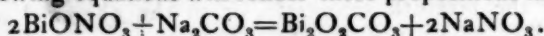
The following rough experiments seem to bear out the latter assumption, which also accords with the opinion of Squire, who gives as incompatibles of bismuth subnitrate the alkalies and alkaline carbonates.

Two drachms of bismuth subnitrate and the same of sodium bicarbonate were mixed with a small quantity of distilled water, and the bottle containing them was corked and set aside. In a short time, perhaps ten minutes, effervescence commenced and in about an hour the cork was expelled from the bottle. The cork was replaced and the reaction allowed to go on until all effervescence had ceased. The mixture was then transferred to a small filter, and the filtrate tested for HNO_3 , which was found. The precipitate, after being very well washed, was also examined for HNO_3 , but without success. It, however, effervesced briskly on the addition of dilute sulphuric acid, proving the presence of CO_2 . Examined by a lens, the precipitate had lost the crystalline structure of the subnitrate, corresponding now in appearance with the carbonate. This experiment was repeated, substituting sodium carbonate for the bicarbonate, with the following result: No effervescence whatever took place, but at the end of forty-eight hours the bismuth was examined and found to be entirely converted into the carbonate.

I need not add that the bismuth subnitrate was perfectly neutral in its action on litmus paper, as the latter experiment fully proves.

It would thus appear that, independently of any free acid that may be present in subnitrate of bismuth, owing to insufficient washing (1) that an admixture of this bismuth salt with the alkaline carbonates or bicarbonates results in mutual decomposition; (2) that when the carbonates are used, decomposition without effervescence ensues; and (3) that when the bicarbonates are used, decomposition with liberation of CO_2 takes place.

The following equations will render these propositions intelligible:



In dispensing such mixtures it is clearly the duty of the compounder to complete as far as possible the decomposition before sending out the mixture. This may be partially effected by rubbing the two salts in a mortar with a little hot distilled water until the liquid is cold. But, whenever practicable, the attention of the prescriber should be drawn to the incompatibility and the substitution of the carbonate suggested.—*Phar. Jour. and Trans.*, Dec. 21. 1878.

ARTIFICIAL FRUIT ESSENCES.

By THE EDITOR.

Fourteen years ago, Kletzinsky published formulas for fifteen different fruit essences which, in 1867, were republished by several journals (see "*Am. Jour. Pharm.*," 1867, p. 238). Several of these formulas were again produced in the last volume of the *Confectioners' Journal* without any alterations except that in the essence of apple the quantity of oxalic acid was reduced from 1 to $\frac{1}{2}$ part, and glycerin from 4 to 2 parts; in essence of raspberry, the succinic acid was entirely omitted, and essence of peach was directed to be made of 2 oz. of oil of bitter almonds, 1 oz. of acetic ether and 2 pints of alcohol, but the latter product has evidently the flavor of peach kernels accompanied by a slight fruit odor. The flavor of peach fruit may be imitated by using 5 parts each of acetic-butyric and amylacetic ethers, $\frac{1}{2}$ part (or less); of methyl-salicylic ether (oil of wintergreen), 2 or 3 parts of oil of bitter almonds, and 80 or 100 parts of alcohol.

Kletzinsky's formulas for the extracts of *strawberry* and *raspberry* are much improved by adding from 10 to 20 per cent. of tincture of orris root. If desired the rather acid taste of this tincture may be removed by precipitating the resin, and if solution of acetate of lead is used for this purpose, the filtrate should be carefully freed from any excess of lead by sulphuretted hydrogen or by agitation with solution of sulphate of sodium, which salt being insoluble in the alcoholic liquid, will not impart to it its peculiar saline taste. The tincture of orris may probably be

conveniently replaced by an alcoholic solution of the oil of orris, which has been an article of commerce for some years past.

Since several very important errors had crept into the formulas of Kletzensky as published in 1867, some of which are, however, readily corrected, it has been thought best to republish all the formulas from Wittstein's "Vierteljahresschrift," xvi, p. 268. These formulas are given in *parts by measure* for 100 parts of alcohol, and whenever acids are used, they are to be previously dissolved in alcohol.

Essence of Apple.—Aldehyd, 2 parts; chloroform, acetic ether, nitrous ether and oxalic acid, each 1 part; glycerin, 4 parts; amyl-valerianic ether, 10 parts.

Essence of Pear.—Acetic ether, 5 parts; amyl-acetic ether and glycerin, each 2 parts.

Essence of Cherry.—Benzoic ether, acetic ether, each 5 parts; glycerin, 3 parts; cœnanthic ether and benzoic acid, each 1 part.

Essence of Black Cherry.—Benzoic ether, 5 parts; acetic ether, 10 parts; oil of persico (peach kernels) and benzoic acid, each 2 parts; oxalic acid, 1 part.

Essence of Peach.—Formic ether, valerianic ether, butyric ether, acetic ether, glycerin and oil of persico, each 5 parts; aldehyd and amylic alcohol, each 2 parts; sebacylic ether, 1 part.

Essence of Apricot.—Butyric ether, 10 parts; valerianic ether, 5 parts; glycerin, 4 parts; amylic alcohol, 2 parts; amyl-butyric ether, chloroform, cœnanthic ether and tartaric acid, each 1 part.

Essence of Plum.—Glycerin, 8 parts; acetic ether and aldehyd, each 5 parts; oil of persico, 4 parts; butyric ether, 2 parts, and formic ether 1 part.

Essence of Grape.—Cœnanthic ether, glycerin, each 10 parts; tartaric acid, 5 parts; succinic acid, 3 parts; aldehyd, chloroform and formic ether, each 2 parts, and methyl-salicylic ether, 1 part.

Essence of Currant.—Acetic ether, tartaric acid, each 5 parts; benzoic acid, succinic acid, benzoic ether, aldehyd and cœnanthic acid, each 1 part.

Essence of Strawberry.—Butyric ether and acetic ether each 5 parts; amyl-acetic ether, 3 parts; amyl-butyric ether and glycerin, each 2 parts; formic ether, nitrous ether and methyl-salicylic ether, each one part.

Essence of Raspberry.—Acetic ether and tartaric acid, each 5 parts; glycerin, 4 parts; aldehyd, formic ether, benzoic ether, butyric ether, amyl-butyric ether, acetic ether, cœnanthic ether, methyl-salicylic ether, nitrous ether, sebacylic ether and succinic acid, each 1 part.

Essence of Pineapple.—Amyl-butyric ether, 10 parts; butyric ether, 5 parts; glycerin, 3 parts; aldehyd and chloroform, each 1 part.

Essence of Melon.—Sebacylic ether, 10 parts; valerianic ether, 5 parts; glycerin, 3 parts; butyric ether, 4 parts; aldehyd, 2 parts; formic ether, 1 part.

Essence of Orange.—Oil of orange and glycerin, each 10 parts; aldehyd and chloroform, each 2 parts; acetic ether, 5 parts; benzoic ether, formic ether, butyric ether, amyl-acetic ether, methyl-salicylic ether and tartaric acid, each 1 part.

Essence of Lemon.—Oil of lemon, acetic ether and tartaric acid, each 10 parts; glycerin, 5 parts; aldehyd, 2 parts; chloroform, nitrous ether and succinic acid, each 1 part.

The different manufacturers of artificial fruit essences doubtless prepare them by

formulas of their own, and this explains the difference in the flavor, which is particularly noticeable on largely diluting them with water. If the essences have been prepared with a dilute alcohol their odor is more prominent, and they are apparently stronger; but on mixing a small quantity with a large quantity of water in given proportions, the true flavoring strength may be better discerned.

A fruit essence, which is much employed in the United States, is *essence of banana*; it consists usually of butyric ether and amyl-acetic ether, equal parts, dissolved in about 5 parts of alcohol.

The red color of strawberry and raspberry essence is produced by anilin red (fuchsin), the blueish tint of which is conveniently neutralized by a little caramel. If caramel alone is used for coloring essences a yellow or brown color is obtained, according to the quantity used.

The "Confectioners' Journal" gives formulas also for the following essences:

Essence of Blackberry.—Tincture of orris-root (1 to 8), 1 pint; acetic ether, 30 drops; butyric ether, 60 drops.

Essence of Nectarine.—Extract of vanilla, 2 parts; essence of lemon, 2 parts; essence of pineapple, 1 part.

VARIETIES.

Food Adulteration.—We had occasion, not long since, to criticise somewhat sharply the management of the Social Science Association, in allowing a member to secure a quasi-sanction for a tissue of sensational assertions with regard to food adulteration in this country—assertions which we had the best of reasons for believing to be as groundless as they were sensational.

Indirectly, however, Mr. Angell's extravagances have been beneficial in calling out from public analysts a summary denial—not only of his assertions, but all others like them. The Boston "Evening Transcript" prints a three-column report of an interview touching this matter, with Professor James F. Babcock, State Assayer of Liquors and Professor of Chemistry in the Boston University.

While in hearty sympathy with the efforts making to prevent or diminish the adulteration of food, Professor Babcock is obliged to contradict emphatically Mr. Angell's sweeping statements. With regard to the use of poisonous adulterants, he said that in a large experience he had rarely found in foods or drinks substances which would be likely to be injurious to health.

As State Assayer of Liquors, he has had to examine a large number of samples sent to him by selectmen and other public officers. About one-third of the samples were found to be "extended" by artificial colors and flavors; but almost without exception these adulterants were not injurious to health.

Those liquors most adulterated or likely to be adulterated with really injurious substances are ports and clarets, which are said sometimes to contain logwood or

anilin colors, though he never met with any in the samples submitted to him as assayer.

For several years Professor Babcock was the official analyst of Boston, and made analyses of milk for the milk inspector. About a quarter of the milk sold was found to be diluted with water and the color restored by the use of burnt sugar. He had never found any other adulterations in milk. He said:

"All the stories of sheep's brains, starch, flour, chalk, etc., as adulterants of milk are idle fancies. Records of the milk inspector of the city of Boston, Mr. Henry Faxon, whom I believe to be a faithful and efficient officer, contain sworn statements of the results of analyses of milk, the first in 1859 by Dr. A. A. Hayes, and followed in succeeding years by others, from the late Charles T. Carney, Dr. Charles T. Jackson, Dr. J. C. White and Professor J. M. Merrick, including about one hundred by myself, a record of twenty years, and comprising nearly five hundred analyses, and in no instance is anything other than water and caramel reported."

The average amount of water found in Boston milk was about 10 per cent.; but that amount is decreasing. He knew of no adulteration of butter, except possibly by the addition of oleomargarin, which if properly prepared is worth even more than butter as a food. He never found granular or block sugar adulterated. In exceptional cases glucose has been worked up with cheap sugar; but glucose is not injurious. It is less sweet than cane sugar, but has almost the same food value.

Glucose comprises about 80 per cent. of honey, about 60 per cent. of dried figs. It is the substance into which in the body all starchy or saccharine food must be first converted before it can be assimilated. Bread and cane sugar when taken into the body are very rapidly changed into glucose.

In molasses the absence of foreign substances is almost the universal rule. The cheaper grades of syrups are sometimes mixed with glucose, but not in any of the refineries in the vicinity of Boston. Alum and tin are sometimes used in bleaching syrup, but their use is not countenanced by the better class of refiners.

When tin and alum are used, the object is the saving of time and labor. Their use is very limited.

Candy, though a good deal mixed with glucose, is rarely adulterated with anything injurious to health. "There are some candy toys, not intended, but of course liable, to be eaten by children, which are sometimes painted or colored with poisons—metallic pigments—but I think the attention which has been called to this matter by the published reports of the State and city boards of health and the prosecution of one or two manufacturers last year has had a very beneficial effect, and I think it would be difficult to find in Boston at the present time candy adulterated or colored with any substance likely to be injurious. Starch is used to a considerable extent in making lozenges, and gum arabic in some kinds of confectionery, also gelatin, but these can hardly be called adulterations, as they are well-known articles of food."

The adulterations of ground mustard, pepper, spices, etc., are of a nature to affect the pocket rather than the health. The same may be said of teas and coffees. Of the general purity of drugs, Professor Babcock said: "I think of all classes of merchants, retail druggists are less guilty of adulterating their goods than any other."—*Scientific American*, March 1, 1879.

A Novel and Simple Method of Taking Specific Gravities.—M. Gannal has recently devised a means of determining exactly, and with the greatest facility, the specific gravity of all liquids.

With his "densimeter hydrostatique" all calculation is obviated, and the specific gravity is ascertained by simply reading the weight on the balance.

This useful and ingenious apparatus is made in the form of an *olive*, so that bubbles of air shall not attach themselves to its sides.

The olive (whether made of glass or metal) has a volume exactly equal to one decimal subdivision of a cubic meter. There are two different methods employed in the practical use of the apparatus:

1st. We may suspend it on the platform of the balance, and, after having produced an equilibrium, we plunge it into the liquid; the equilibrium is then destroyed by the loss of weight of the olive, and the number of grams which it is necessary to add to the scale-pan to restore the equilibrium, is the exact specific gravity of the liquid.

2d. Or we may equally well adopt the following plan: We put the liquid whose specific gravity we desire to ascertain in a glass vessel on one pan of the balance; we balance the scale-pans, and then suspend the olive in the liquid by means of a fine thread. The equilibrium is destroyed, and the scale descends on the side on which the olive is suspended, and the weight—which it is necessary to place in the other pan to restore the equilibrium—is equal to the specific gravity of the liquid.

This apparatus will determine the density of all liquids, whether they be heavier or lighter than water, whether they be acids, alcoholic, thick or syrupy. It advantageously supersedes the areometers; it is not fragile, and it gives the indications with an exactitude depending on the sensibility of the balance employed. The work is reduced to a simple weighing and reading of the weights on the balance.

M. A. Gannal has constructed instruments of 100 cubic centimeters and 10 cubic centimeters only. The larger apparatus is the one which will prove the most convenient and the most needed in commercial and industrial determinations. With this instrument and a balance sensitive to 1 decigram, we may determine the density to the thousandth degree.—*Jour. Frank. Inst.*, Dec., 1878, from *Les Mondes*, Sept. 26, 1878.

Pure Salicylic Acid as a Preservative of Drinking Water.—Hugo Schiff states that 0.3 parts salicylic acid, added to 1000 parts of drinking water containing much organic matter and kept in a stoppered bottle, which was opened from time to time, entirely prevented its decomposition, it tasting perfectly fresh at the expiration of three years. Water can also be prevented from decomposing by adding a minute quantity of bisulphide of carbon to it, or of phenol in salt water, but will then not be fit for drinking.—*Ber. d. deutsch. Chem. Ges.*, XI, p. 1528.

Preservation of Solutions of Gum, Glue and Gelatin.—M. Regensburg recommends adding to 1 liter of the solution, in hot rain- or distilled water, from 60 to 80 drops of silicate of soda, and stirring the mixture well for five minutes. If the

solution has already commenced to decompose, it is heated, and to every 1-10 liter 14 drops of soluble glass are added.—*Pharm. Zig*, Oct. 23, 1878, p. 735, fr. *Polyt. Notizbl.*

Easy Method for Preparing Liquor Ferri Dialysati.—F. Schneider dissolves 300 grams of commercial crystallized ferric chloride in 1000 distilled water, and gradually adds 350.0 of caustic potassa (offic. Pharm. Germ.), in small quantities, waiting after each addition until the oxide of iron, which separates, redissolves, and adding a few drops of liquor ferri sesquichlorati, if necessary. He then dialyses the clear liquid, changing the water until silver solution no longer produces a reaction in the diluted iron liquid and scarcely any cloudiness in the water, determines the specific gravity of the liquid and reduces it with water to the required strength (5 per cent., 1.046 spec. grav.). The yield is about 1,900 grams, and from 12 to 14 days are required for the completion of the preparation.—*Schw. Wochenschr.*, Nov. 22, 1878, p. 409.

The seeds of *Phaseolus radiatus*, var. *subtrilobata*, known as *Azuki* in China and Japan, and used as a prophylactic against the beri-beri disease peculiar to Eastern Asia, were analyzed by Devars, who reports that they contain no particular active principle, but a red coloring matter, 17 to 18 per cent. of albuminous substances, 10.60 to 12.30 per cent. of sugar and gum, and 34.50 to 37.50 per cent. of starch.—*Pharm. Zig*, Dec. 11, 1878, p. 854, from *Nieuw. Tijdschr. voor d. Pharm.*

Fructus algarobillæ, the fruit of *Balsamocarpum brevifolium*, a tree indigenous to Chili, belonging to the nat. ord. *Mimosæ*, recommended in Gehe & Co.'s Handelsber. for manufacturing ink and for tanning purposes, contains 67.45 per cent. of tannic acid; another constituent, however, a yellow coloring matter, would be apt to impart an undesirable yellow color to leather, for which reason the fruit is rarely used alone, but usually in connection with oak bark or other materials in the proportion of about 25 per cent. algarobilla to 75 per cent. of oak bark.—*Ztschr. d. Oest. Ap. Ver.*, Nov. 20, 1878, p. 531.

Nitro-Benzol in Oil of Cherry Laurel and Bitter Almond.—The substitution of nitro-benzol for cherry laurel oil can be easily recognized by placing H_2SO_4 , a little bichromate of potassium and a few drops of the suspected liquid into a long test tube, and exposing the end of a glass rod, moistened with a solution of sulphate of brucia in H_2SO_4 , to the evolved vapors, when it will turn bright red in case the liquid is nitro-benzol, but will remain colorless in case it is cherry laurel oil. Referring to the tests of Chevallier, Prof. Dragendorff, Prof. Maisch ("Amer. Jour. Pharm.," Nov., 1857, p. 544) and of Hoffmann for determining the presence of nitro-benzol in bitter almond oil, Dr. E. Pegna proposes the following new method, which he considers superior to the others: A small quantity of alcohol, of a solution

of hydrate of potassa, purified by alcohol (so-called alcoholic potassa) and a few drops of solution of chloride of iron are added to the oil; the mixture is allowed to stand for several hours, then shaken, distilled, the distilled oil separated from the water, poured into a test tube on alcoholic potassa, and heated. In case the oil is pure there is no color reaction, while there is a dark coloration if adulterated; a few drops of solution of chloride of lime added to the mixture after cooling, will color it violet.—*Schw. Wochenber.*, Nov. 15, 1878, p. 399, from *L'Orosi, bollet. d. chim. farm.*

Piney-Varnish, Piney-Tallow.—Piney-varnish is the fresh soft resin obtained by incisions into the bark of *Vateria indica* L. (*Eleocarpus copaliferus*, Reetz), a useful tree indigenous to East India and particularly to Malabar. On exposure to the air it hardens into a glassy substance, appearing in commerce under the name of East India copal or anime resin, selected pieces of which are used for making ornaments. The seeds of *Vateria indica*, used in East India as a sure cure of dysentery and pain in the stomach, yield, when boiled, a solid fat or vegetable tallow (piney-tallow), which contains about 70 per cent. of palmitin and 25 per cent. of olein, and which, rendered colorless by bleaching, is used in the manufacture of candles.—*Pharm. Centralb.*, Dec. 19, 1878.

Strong and Durable Iron Cement.—Three parts of sodium chloride, 1 part of powdered sulphur and 30 parts of fine iron-filings (preferably powdered iron) are mixed and rubbed into a soft mass with sulphuric acid, diluted in the proportion of 6 parts of the acid to 8 parts of water. This cement will get as hard as stone in one to two days. All grease and rust should be previously removed from the article to be mended.—*Pharm. Handelsbl.*, Dec. 4, 1878, p. 258.

Purification of Rancid Butter.—R. W. Barnard's patented process, which, he claims, will restore the most rancid butter, consists of working it up with a solution of sodium bicarbonate, sodium chloride and sugar, to which a solution of tartaric acid is added.—*Pharm. Handelsbl.*, Dec. 4, 1878, p. 258.

Clarifying of Wines, Liquors, Vinegar, etc.—A powder which renders animal charcoal entirely unnecessary, and which is recommended for clarifying turbid and at the same time bleaching colored liquids, is made by Dassori by mixing albumen 30 kg., neutral potassium tartrate 300 grams, alum 500 grams, and ammonium chloride 70 kg. This powder is used in the proportion of 60 grams to 2 hectoliters of the liquid, like albumen, being beaten up carefully with water, but not directly with the liquid to be clarified. When once clarified the latter will not become cloudy again.—*Pharm. Ztschr. f. Russl.*, Oct. 15, p. 633, fr. *Chem. Ztg.*

So-called Platinum Amalgam, used by dentists quite extensively for filling teeth, was analyzed by Gustavus Janecek, who found the following constituents in 100 parts of two different samples:

	No. 1.	No. 2.
Zinc,	51.72 per cent.	8.52 per cent.
Silver,	34.35 "	75.26 "
Mercury,	13.93 "	16.22 "
Total,	100.00 "	100.00 "

Neither sample contained a trace of platinum.—*Pharm. Ztschr. f. Russl.*, Nov. 15, 1878, p. 687, fr. *Allg. Wien. med. Zig.*

Celloidin, an Unexplosive Substitute for Gun-cotton for making Collodion. is patented by Schering, who claims that, while making an excellent preparation, it being entirely soluble in the mixture of ether and alcohol, it has the advantages over gun-cotton of neither being capable of igniting spontaneously nor exploding when rubbed or pounded, thus being entirely safe for transportation. Its only objectionable feature is the length of time required for solution, which, especially when very dry, far exceeds that necessary for dissolving gun-cotton. It is probably made by partial evaporation of collodion.—*Pharm. Handelsbl.*, Dec. 4, 1878, p. 257, fr. *Phot. Not.*

Fire-Proof Paper and Ink.—The former is entirely fire-proof in an ordinary fire, but is not entirely incombustible if exposed to an exceedingly great heat, not being, however, reduced to ashes. It consists of 1 part of vegetable fibres, 2 parts asbestos, $\frac{1}{10}$ part borax and $\frac{1}{2}$ part alum, all finely ground, mixed to a paste with water, and treated like other paper masses. It is made into writing and wrapping paper. The ink is fire proof, insoluble in water, and is made by boiling in water a mixture of 90 grams finely ground graphite, about 0.75 gram copal or other resin, 8.0—10.0 grams iron sulphate; 30.0—32.0 grams tincture of nut-galls and indigo-carmin. For colored ink any other mineral color can be substituted for graphite.—*Pharm. Centralb.*, Nov 7, 1878.

On Gummy Degeneration of Almonds. By G. VULPIUS—On certain sweet almonds which had been washed and dried, a separation of bassorin was remarked; so that one half of the almond consisted of this substance, whereas the other half was of a hard cartilaginous consistency, and had a brilliant resinous surface. Although gum is often formed in the amygdalin, the above phenomenon does not appear to have been observed hitherto.—*Jour. of Chem. Soc.*, Nov., 1878, from *Arch. Pharm.* 3, xiii, 38.

The Furruginous Coloring Matter of Red Wines. By A. GAUTIER.—The author re-affirms that the blue coloring matter which he obtained by incom-

pletely saturating wine and then adding sodium chloride, contains nearly 4 per cent. of iron.—*Jour. of Chem. Soc.*, Nov., 1878, from *Compt. Rend.*

Examination of the "Gum" of the Quebracho Colorado (*Loxopterigium Lorentii*, Grisebach). By PEDRO N. ARATA.—This tree, belonging to the Anacardiaceae order, is indigenous in, and peculiar to, the northern part of the Argentine Republic. The so-called gum, or rather thickened juice, collects in the cracks and hollows of the wood, in ruby-red concretions somewhat resembling colophony, but more brittle; it is easily pulverized, and yields a brick-red powder. It is scentless, but has a slightly astringent taste. Sp. gr. 1.3756 at 15°. It is easily soluble in alcohol, acetone, and acetic ether; dissolves also in amyl alcohol and acetic acid, but is insoluble in benzin, carbon bisulphide, chloroform and turpentine oil; nearly insoluble in cold water and in ether; nevertheless, an ethereal solution, having an emerald-green color, may be obtained by agitating the gum with ether and water. Boiling water dissolves it completely, and deposits part of it on cooling. It dissolves also in strong sulphuric acid, and is precipitated therefrom by water. Heated in a platinum capsule, it swells up and burns, leaving a shining porous cinder, which burns away slowly on continuing the heat. If the combustion be completed in a stream of oxygen, the unburnt residue is scarcely appreciable.

A 1 per cent. solution of the gum in absolute alcohol, in a layer 7 mm. thick, exhibits an absorption-spectrum having a dark band commencing between the solar lines A and B, and terminating at C; another extending for a short distance on each side of D; and a third, beginning half way between D and E and extending to all the more refrangible part of the spectrum. The same solution in a layer 25 mm. thick absorbs the whole of the spectrum, excepting a narrow space from C half-way to D. A solution of dragon's blood, which in some respects resembles quebracho gum, exhibits a very different spectrum, containing a dark band extending for a short distance on each side of C, and a second beginning just beyond D and occupying all the rest of the spectrum.

Reactions.—Quebracho gum, subjected to dry distillation, yields between 100° and 120°C. a distillate which remains liquid on cooling, and between 240° and 245°C. a distillate which solidifies to colorless prisms of pyrocatechin (m. p. 105°, nearly, b. p. 240°—245°). The gum is strongly attacked by concentrated *nitric acid*, and when heated with the same acid somewhat diluted with water, it is oxidized to oxalic acid and trinitrophenol or picric acid. Fused with *potash* it yields protocatechuic acid, $C_7H_4O_4$ or $C_6H_3(OH)_2.COOH$, and phloroglucin, $C_6H_2O_3$.

The formation of these products renders it probable that quebracho gum contains one of the bodies called catechins¹; but in consequence of the great tendency of these bodies to alteration, the author has not yet been able to obtain satisfactory evidence of their actual presence in the gum. The existence of a catechin in an

¹ Gautier has shown that the term "catechin" usually supposed to denote a definite proximate principle of plants, really includes several compounds forming a natural family of organic bodies (see "*Journal Chemical Society*," 1877, ii, 892).

anacardiaceous plant would be a novelty, these bodies having hitherto been found only in the leguminous, rubiaceous and cedruleaceous orders.—*Jour. Chem. Soc.*, Dec., 1878, from *Anales de la Sociedad Científica Argentina*, July, 1878.

Substances Obtained from Strawberry Roots. By T. L. Phipson—Strawberry root contains a kind of tannin called *fragarianin*, having a pale-yellow color, soluble in water, alcohol and slightly acidulated water, and giving a green color with salts. It forms an insoluble compound with hydrochloric acid, and is precipitated in purple flakes by alkalis. *Fragarianin* may be obtained pure by evaporating an aqueous solution in an atmosphere of carbon dioxide; when boiled with dilute acids it yields *fragarin*, which may be obtained from the root by digesting 5 grams with a 5 per cent. hydrochloric acid solution for 48 hours, when the solution is filtered, strongly acidified and boiled.

As the temperature rises, the color changes from yellow to orange, and, after boiling for some time, *fragarin* separates out as a reddish-brown amorphous powder, soluble in water, alcohol and ether, and dissolving in potash with a reddish-purple color. It forms a compound with sulphuric acid, and a yellow nitro-compound when treated with nitric acid. When heated with hydrochloric acid and potassium chlorate, it yields a yellow chlorine compound insoluble in water and decomposed by ammonia. It chars when heated, probably yielding protocatechuic acid, which is also formed when *fragarin* is fused with potash. Cinchona-red and *fragarin* may be distinguished by their action with caustic potash, the former giving a dirty-green color and the latter a reddish-brown solution.

Strawberry root also contains a body similar to quinovin, which yields a substance resembling, but not identical with, quinovic acid. It also contains a small quantity of gallotannic acid.—*Jour. Chem. Soc.*, Dec., 1878, from *Chem. News*, xxxviii, 185.

Magnesia as an Antidote to Arsenic.—On adding magnesia to water containing arsenious sulphide in suspension, the liquid is rapidly decolorized, according to Ph. de Clermont and J. Frommel, with the formation of soluble sulpharsenite of magnesium and insoluble arsenite of magnesium. The reaction takes place according to the equation, $2As_2S_3 + 5MgO + H_2O = Mg_3(AsS_3)_2 + 2MgHASO_3$. If the filtered liquid is heated to ebullition the sulpharsenite is decomposed, insoluble arsenite being formed and sulphuretted hydrogen evolved, according to the equation, $Mg_3(AsS_3)_2 + 7H_2O = 2MgHASO_3 + 6H_2S + MgO$. It follows from this, that while magnesia may be regarded as a good antidote for arsenic as long as it is present as arsenious acid, the reverse is the case if a portion of the poison has been converted into sulphide; this would probably escape absorption on account of its insolubility, but is rendered soluble by magnesia. The transformation of arsenious acid into sulphide has been noticed, among others, by L. A. Buchner (*"Neues Repert."*, 1868, p. 386), who found in the intestinal membranes of a person poisoned by arsenious acid a quantity of sulphide of arsenic in the form of a yellow powder.—*Rép. de Phar.*, Sept., p. 402.

Cinchona Alkaloids in their Natural Combination.—According to De Vrij, the alkaloids exist in cinchona barks in combination with cinchotannic acid, while kinic acid is present in the free state. It is owing to the latter acid that a portion of the cinchotannates are soluble in cold water. The cinchotannates of the dextrogyre alkaloids are more freely soluble than those of the levogyre alkaloids—*Jour. de Phar. et de Chim.*, Sept., 1878, p 324.

Quinia Test.—C. Rump prefers the following modification of Hesse's test (see page 135): 0.5 gram of quinia sulphate is put into an ordinary test tube; 10 grams of distilled water are added, the test tube immersed in hot water for some time, and after the contents have again cooled 5 grams of the liquid are filtered into another test tube, and to this is added 1 gram of ether and from 3 to 5 drops of ammonia water, after which the tube is corked and set aside. Measuring the ether is less accurate than weighing, and 1 cc. of ether is insufficient for the purpose.—*Phar. Zeitung*, 1879, No. 9.

Villate's Mixture in the Treatment of Sinuses.—A report from the Charity Hospital, New York, in the New York "Medical Journal," states that several deep sinuses have recently been under treatment in the surgical service, in which no necrosed bone could be found, but which proved intractable to heal. Villate's mixture was tried, first of half strength. In some of the cases it proved of value, in others it failed partially or completely. The case in which it proved of most service was one of deep sinus in the neighborhood of the hip joint. The original composition of the mixture was—

R	Liq. plumbi subacet,	.	.	.	.	.	3i	30
	Zinci sulph. cryst,	.	.	.	.	.	ss	2
	Cupri sulph. cryst.,	.	.	.	.	.	fl. 3viss	26
	Aceti vini albi,	.	.	.	.	.

The mixture was injected once a day, and proved a more satisfactory application than any other. Some patients complained of severe pain, others felt but slight inconvenience from it.—*Ohio Med. Recorder*.

Formula for Paresi's Hemostatic Collodion.—

Official collodion,	.	.	.	.	.	.	100
Carbolic acid (pure),	.	.	.	.	.	.	10
Tannic acid,	.	.	.	.	.	.	5
Benzoic acid,	.	.	.	.	.	.	3

M. secund. art.—*Ibid.*, from *L'Union Medicale*.

MINUTES OF THE PHARMACEUTICAL MEETING.

PHILADELPHIA, February 18th, 1879.

The fifth of the present series of pharmaceutical meetings was called to order by Vice-President Chas. Bullock; the minutes of the last meeting were read and approved.

The Registrar, on behalf of Prof. Bridges, presented for the library a copy of Bowman's "Medical Chemistry," and also one of his "Practical Chemistry," for which the Registrar was directed to return the thanks of the meeting.

Mr. Gaillard read a paper upon *the use of the microscope in pharmacy* (see page 116), which was referred to the publication committee. A member present asked whether there was any systematic treatise upon the microscope as applied to the uses of the pharmacist, and the response was that no such treatise existed.

As a matter of passing interest, Mr. Bullock called the attention of the meeting to the coloring matter termed *uranin*, a derivative of coal tar. Only the tenth part of a grain was thrown into about half a pint of distilled water, and in a few moments a beautiful greenish-yellow coloration was developed, showing a fluorescence of great brilliancy.

Mr. Bullock read a short paper upon *Japanese filtering-paper*, received by him from a correspondent in Yokohama. The samples vary from a coarse uneven texture to a fineness almost like tissue. The material from which it is manufactured seems to have undergone little, if any, bleaching. An inspection shows it to be hand-made, after the primitive Japanese method, on frames made of bamboo, in one direction the markings being fine, while in the transverse direction they are quite coarse, and evidently the marks of the supports of the sieves. Some of the paper was soaked in water and made into a pulp, which was stained lightly with a staining fluid made from logwood—much used by microscopists for this purpose—and then well washed. When examined under the microscope, it appears that one part of the fibre has become colored and another is not affected. By increased magnifying power we find the stained fibres are ducts, some of them showing annular or spiral markings, and occasionally we find in them cubical or rhomboidal crystals. That part which is not colored is the woody fibre. At intervals, links of closed cells are noticed, which contain granular matter, probably derived from the integuments or outer covering. This collection of débris has probably belonged to the pith, and all is evidently derived from the reed, which is the source of material of which the paper is fabricated.

Prof. Maisch exhibited some specimens of artificial flowers from China, and of paintings on what is called "rice paper," but which is really the pith of a plant, said to be *Aralia papyrifera*, sliced very dexterously by a knife.

A specimen of *oil of spearmint* was exhibited by a member, which, when purchased a few weeks since, appeared to be fresh, as was represented, but in this short time had become much resinified, and had even deposited a considerable percentage of crystalline matter.

The risk of using *plate glass shelves* without having longitudinal supports beneath them to prevent their falling if they crack, was noticed. In an instance occurring lately, the glass seemed to have first split into a great many small portions with something like an explosion; this occurred when the amount of weight was not nearly as great as had formerly been sustained by the shelf.

Prof. Sadtler exhibited and explained the *Glacière Italienne*, a little apparatus designed for the quick production of small quantities of ice. The apparatus con-

sists of a cylinder of metal, into which a conical metal chamber fits, leaving an empty space between the two; into this space two pints of water and half the bulk of carbonate of sodium are placed; the conical tube is placed in the solution and agitated for several minutes, when the soda solution is changed for water and chloride of ammonium, and a rolling motion is kept up for 10 or 12 minutes, when the inner vessel in which was placed the water will be found filled with ice, from which it can be readily removed, owing to the conical form.

A communication from Samuel F. Troth was read, giving the amount sold and price paid for *sulphate of quinia* by the firm of Henry Troth & Co. during a period of 31 years, commencing with 1823, when quinia was first manufactured in Philadelphia. The following table will show the fluctuation in the price of quinine during the period named.

Year.	Amount sold.	Price per oz.					Average for the year.
		\$20 00	\$16 00	\$15 00			
1823	52 oz.						\$17 00
1824	63 oz.	14 00	12 00				13 00
1825	50 oz.	8 00	8 00				8 00
1826	145 oz.	5 25	5 50	6 00	7 00		5 95
1827	200 oz.	7 50	6 00				6 75
1828	560 oz.	6 00	3 25				4 62½
1829	700 oz.	2 90	2 75	2 62	2 43	2 25	2 59
1830	210 oz.	2 50	1 75				2 12½
1831	500 oz.	1 35	1 40	1 50			1 42
1832	300 oz.	1 75	1 90	2 00			1 89
1833	250 oz.	1 70	1 87				1 79
1834	700 oz.	1 25	1 40	1 55	1 80		1 50
1835	300 oz.	1 60	1 62	1 65			1 62
1836	650 oz.	1 45	1 50	1 58			1 51
1837	325 oz.	1 40	1 40				1 40
1838	325 oz.	1 65	1 60	1 90			1 69
1839	279 oz.	2 75	3 30	2 85	2 90		2 94
1840	100 oz.	3 12½	2 87½	3 00			3 00
1841	362 oz.	2 62½	2 55	2 50			2 54
1842	125 oz.	2 00	1 75	1 60			1 78
1843	275 oz.	1 55	1 60	1 70	1 75	1 80	1 68
1844	260 oz.	2 00	3 00				2 50
1845	300 oz.	2 35	2 40				2 37½
1846	350 oz.	2 40	2 20				2 30
1847	420 oz.	2 30	2 35	2 40			2 35
1848	300 oz.	2 60	2 65	2 70			2 65
1849	800 oz.	3 00	2 95	3 25	3 65		3 14
1850	200 oz.	3 70	3 70				3 70
1851	200 oz.	3 25	3 25				3 25
1852	150 oz.	3 00	2 80				2 90
1853	400 oz.	2 70	3 00	3 20			2 97

During the first 20 years the average price was \$4.85, and during the last 11 years \$2.70 per oz. The highest price paid for the article was \$20 00, in 1823, and the lowest \$1.25, in 1834.

A specimen of *bicarbonate of ammonia* was presented to the meeting as now often found mixed with the common carbonate in the casks in which it is imported. For

many purposes it must be quite as valuable as the sesqui-carbonate, but when designed to be employed as smelling salts it would be worthless, as it is almost destitute of odor.

There being no further business, the meeting, on motion, adjourned.

THOS. S. WIEGAND, *Registrar.*

PHARMACEUTICAL COLLEGES AND ASSOCIATIONS.

Alumni Association Philadelphia College of Pharmacy.—The fifth social meeting of the season was held at the College Thursday, February 6, Mr. Krewson in the chair. The minutes of the former meeting were read, corrected and approved.

Mr. Mattison read an exhaustive paper on Dialyzed Iron, which was referred to the Publishing Committee, and the thanks of the meeting tendered the author. A general expression of the views of different members on dialyzed iron followed. Some mentioned instances where the remedy had apparently produced very good results, but the general opinion seemed to coincide with Mr. Mattison's—that dialyzed iron has little or no value, except as an antidote in cases of poisoning by arsenious acid.

Dr. Murray read an article from "New Remedies," entitled The Duties of an Apothecary.

Mr. Sayre, Dr. Murray and Mr. Mattison each gave some practical advice to the students as to answering questions at the coming examination.

Mr. Kennedy read a paper on Adulterated Gum Arabic, which was referred to the Publishing Committee. Mr. Ellis spoke of the mixing of powders fraudently, being an old custom, but thought it was practised less now than formerly. He thought, with Mr. Kennedy, that every case detected should be published, in order to deter others from so doing.

Then adjourned.

Pittsburg College of Pharmacy.—In this institution there have been 45 matriculants, of which number 35 were full course students.

Alumni Association St. Louis College of Pharmacy.—The fourth annual meeting was held Tuesday evening, February 18. Reports of the various committees were read, which proved the Association to be in a prosperous condition. The following officers were elected for the ensuing year:

President, Chas. Gietney; First Vice President, Jas. A. Watkins; Second Vice President, O. E. Treutler; Recording Secretary, Fred. F. Reichenbach; Corresponding Secretary, Chas. E. Smith; Treasurer, Ad. Pfeiffer; Registrar, Thos. F. White; Members of the Executive Board—J. W. Tomfohrde, R. H. Hunstock, Martin Goehring, Paul Nacke and Peter Hoffmann.

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

Jahresbericht über die Fortschritte der Pharmacognosie, Pharmacie und Toxicologie.
Herausgegeben von Dr. G. Dragendorff, Professor in Dorpat. Neue Folge, 12.
Jahrgang, 1877. Göttingen, 1878: Vandenhœck & Ruprecht. 8vo, pp. 598.
Annual Report on the Progress of Pharmacognosy, Pharmacy and Toxicology.

The well-deserved reputation which this annual publication has earned is sustained by the volume now before us, which contains concise and critical reports on all essays possessing pharmaceutical interest which have appeared during the year 1877. The convenient arrangement of the vast material, as adopted in former volumes, has been retained, and the abstracts have been made with the accustomed care and completeness. On page 483, last line, the work "Kinotinctur" should be "Catechutinctur."

The entire series being of permanent value as a reliable work of reference, it will doubtless be of interest to many of our readers that the first ten volumes of this series may be now obtained at 45 marcs, which is rather less than half of the original publication price.

Pharmaceutische Chemie. Von F. A. Flückiger. Berlin, 1879: Rudolph Gærtner.
12mo, pp. 910.
Pharmaceutical Chemistry.

A work like this has to overcome certain difficulties, which are discussed by the author in the preface. Not being intended for the student of general chemistry, but merely for the cultivation of chemistry in its application to pharmacy, a knowledge of the general chemical laws is requisite in order to fully appreciate the merits of the book. In regard to its scope, the author has confined himself chiefly to those chemical compounds which are at the present time medicinally employed in Europe. In each case the process is given by which the preparation may be obtained, omitting such particulars which would be mainly useful to the tyro, but giving many practical hints which will be welcome to the more experienced operator. The reactions occurring in the process, the properties of the compound and the tests for purity are concisely and fully given, always keeping in view that the work is not intended for the beginner. Each article is accompanied by valuable historical notes.

The systematic arrangement may be seen from the following synopsis of the different chapters: Non-metallic elements, metals, binary non-metallic compounds, group of cyanogen, derivatives of marsh gas, alcohol group, non-aromatic organic acids, fats and soaps, carbohydrates, resins, benzol group, volatile oils and alkaloids. This comprises the first half of the work, the second half being devoted to the metallic oxides and salts.

The work will be duly appreciated by the intelligent student who has mastered the rudiments of the science, and by the practical apothecary and druggist engaged

in preparing some or many of the numerous definite compounds employed in medicine. It may be obtained from E. Steiger, New York.

Gmelin-Kraut's Handbuch der Chemie. Anorganische Chemie in drei Bänden. Heidelberg. 1878: Carl Winter's Universitäts-Buchhandlung.

Gmelin-Kraut's Hand-book of Chemistry. Inorganic Chemistry, in three vols.

Parts 9, 10 and 11 of the first division of the second volume contain the following metals: cerium, lanthanum, didymium, yttrium, erbium, beryllium, aluminium, gallium and thorium. Parts 5 and 6 of the second division of the second volume treat of the metals vanadium and chromium.

Lehrbuch der Gährungschemie, in dreizehn Vorlesungen, Von. Dr. Adolf Mayer, Professor, etc., zu Wageninen, Holland. Dritte umgearbeitete Ausgabe. Heidelberg, 1876: Carl Winter's Universitäts-Buchhandlung. Large 8vo, pp. 220.

Chemistry of Fermentation, in thirteen lectures. Third edition.

The first lecture is devoted to a historical introduction and to the definition of fermentation. The following nine lectures treat of alcoholic fermentation, and give a complete review of the various theories advanced and experiments made since the time of Lavoisier, particular attention being paid to the patient labors of Pasteur and others in this direction, and to the controversies which, even at the present time, have not been finally settled.

The last three lectures treat of the other processes of fermentation, such as acetie, lactic, etc., fermentation, the fermentation of fatty acids, alcohols, urea and other bodies.

The work is an excellent exposition of the gradual progress of our knowledge concerning the causes and changes produced in those processes which are known as fermentations, and will be read with profit by those interested.

Universal International Exhibition, Paris, 1878. Report on the Exhibits connected with Materia Medica, Pharmacy, Chemical Industry, etc. By B. H. Paul, Ph.D., E. M. Holmes, F.L.S., and F. Passmore. London, 1878. 16mo, pp. 198.

This interesting and valuable report is a reprint of a series of communications to the London "Pharmaceutical Journal," and gives a full account, embracing much information of lasting value, of the exhibits as designated in the title.

Index to Original Communications in the Medical Journals of the United States and Canada for 1877. Compiled by Wm. D. Chapin, New York. 8vo, pp. 100. Price, \$1.00

The object of this work is explained by the title. It is somewhat similar to the Index Medicus noticed in our last issue, but its scope is more confined and its arrangement different. As far as we have examined it, its references are correct. The journals consulted embrace nearly, but not quite all, those published in North America. The Index for 1878, which will soon be published, will be more complete than this one. We believe, however, that few, if any, papers of importance have escaped the compiler's vigilance.

Physiology: Preliminary-course Lectures, by Jas. T. Whittaker, M.D., Professor of Physiology and Clinical Medicine in the Medical College of Ohio, etc. Illustrated. Cincinnati: Chaney R. Murry, 1879. Robert Clarke & Co. Pp. 288; price, \$1.75.

The lectures are twelve in number, and comprise *the influence of physiology upon practice; the conservation of force; the origin of life; the evolution of its forms; protoplasm, bone, muscle, nerve and food*. The work has been written to meet the wants of the medical student, and it appears to well fulfill this object.

Diphtheria: Its Causes, Prevention and Proper Treatment. By J. H. Kellogg, M.D., etc. Battle Creek, Mich.: Good Health Publishing Co. 12mo, pp. 64.

The praiseworthy aim of this little volume is to supply popular information in regard to the nature, causes and symptoms of this dreaded disease and the best means for its prevention. We doubt, however, the utility of the book, or at least that part of it—about one-third—which is devoted to the *treatment* of diphtheria. A little knowledge is a dangerous thing, and this seems to be particularly applicable to the treatment, by laymen, of this and other diseases.

The Popular Science Monthly. Conducted by E. L. and W. J. Youmans. New York: D. Appleton & Co.

Among the many valuable papers contained in the March number of this journal, we desire to call the special attention of our readers to the essay by J. N. Lockyer, F.R.S., entitled "The Chemical Elements," in which reasons are given for regarding the so-called elementary bodies as being compound ones; also, to an interesting sketch of that celebrated scientist, Chr. G. Ehrenberg, from the pen of Dr. Fred. Hoffmann.

The reception of the following pamphlets is hereby acknowledged:

Proceedings of the New Hampshire Pharmaceutical Association, at the Fifth Annual Meeting, held in the City of Concord, October 8th, 1878, and Reports on the Progress of Pharmacy for 1877 and 1878; with the Address of Prof. W. P. Bolles; also, the Roll of Members and Pharmacy Law. Concord, N. H., 1879. 8vo, pp. 64.

First Annual Report of the State Board of Health of Illinois. Made to the Governor, 1878. Springfield, Ill., 1879. 8vo, pp. 56.

History of the Yellow Fever Epidemic in the Fourth District. Excerpted from the Annual Report of the Board of Health for 1878. By Jos. Holt, M.D., Sanitary Inspector. New Orleans, 1879.

Beiträge zur Chemie der wichtigeren Gummiharze, Harze und Balsame. II. Von Mag. Pharm. Ed. Hirschsohn. 8vo, pp. 70.

Contributions to the Chemistry of the More Important Gum-resins, Resins and Balsams. Reprinted from "Archiv der Pharmacie," 1878, Vol. X.

Report of the Committee on Coinage, Weights and Measures, on the Adoption of the Metric System of Weights and Measures. Forty-fifth Congress, Third Session, House of Representatives. Report No. 53. 8vo, pp. 234.

Address of W. O'Daniel, M.D., President of the Medical Association of Georgia, delivered at the Twenty-Ninth Annual Meeting.